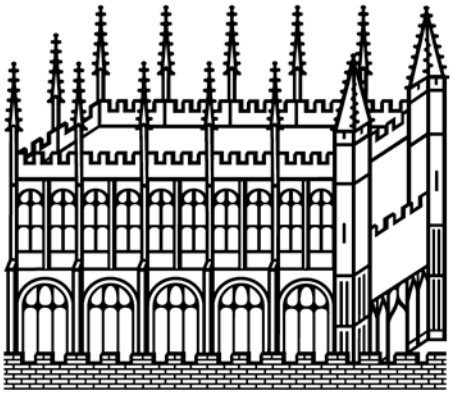
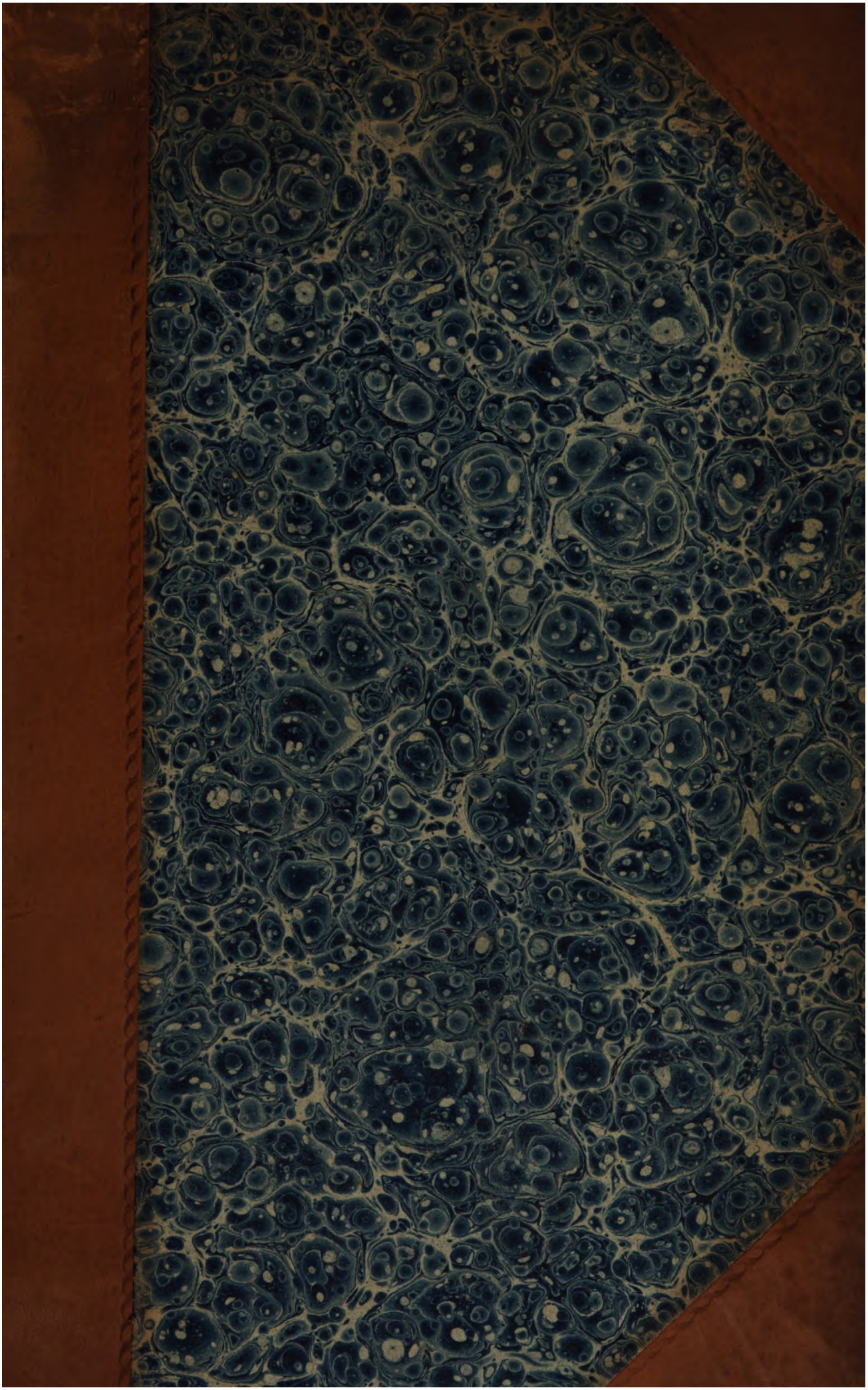
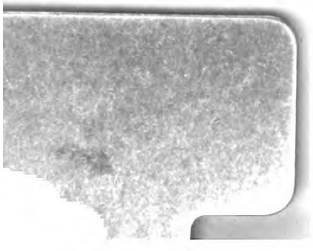






NOTES

ON THE BOTANY

OF

THE ANTARCTIC VOYAGE,

CONDUCTED BY

CAPTAIN JAMES CLARK ROSS, R.N. F.R.S. &c. &c. &c.

IN HER MAJESTY'S DISCOVERY SHIPS

EREBUS AND TERROR;

WITH OBSERVATIONS ON

THE TUSSAC GRASS

OF THE FALKLAND ISLANDS.

BY

SIR W. J. HOOKER, K.H. L.L.D. F.R.A. & L.S.

DIRECTOR OF THE ROYAL BOTANIC GARDENS OF KEW.

WITH TWO COLOURED PLATES.

LONDON:

H. BAILLIERE, PUBLISHER, 219, REGENT STREET.

PARIS: J. B. BAILLIÈRE, LIBRAIRE DE L'ACADÉMIE DE MÉDECINE,
RUE DE L'ÉCOLE DE MÉDECINE.

1843.

TO

HIS ROYAL HIGHNESS

THE PRINCE ALBERT,

&c. &c.

THE FOLLOWING BRIEF NOTES,

WITH REFERENCE

TO THE BOTANY

OF THE ANTARCTIC VOYAGE,

IN THE SUCCESS OF WHICH HIS ROYAL HIGHNESS HAS FELT

AND EXPRESSED THE MOST LIVELY INTEREST, ARE

(WITH PERMISSION)

MOST HUMBLY DEDICATED

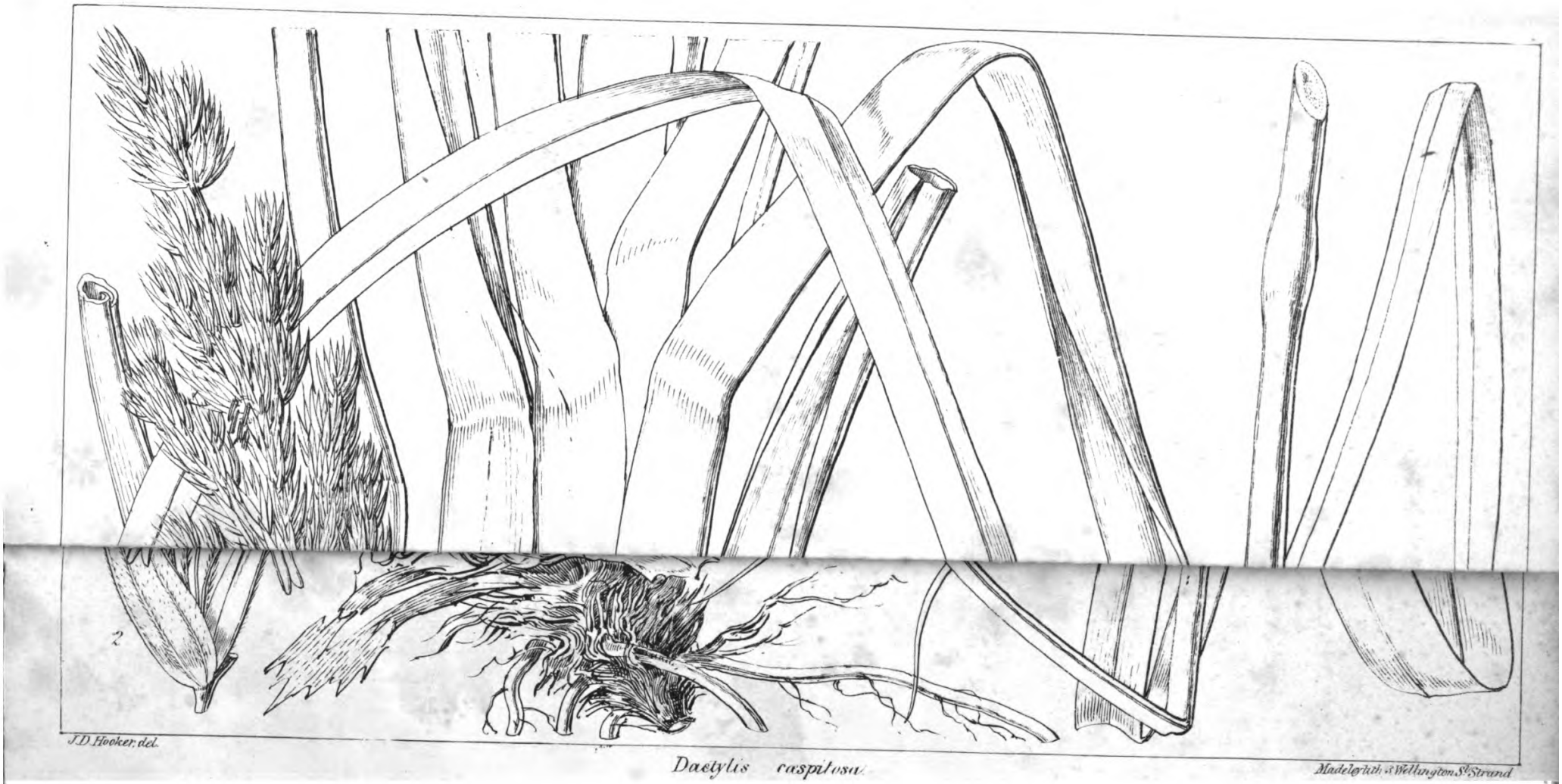
BY

HIS ROYAL HIGHNESS'

DEVOTED AND DUTIFUL SERVANT,

W. J. HOOKER.

ROYAL BOTANIC GARDENS,
KEW, JUNE 1, 1843.



J.D. Hooker, del.

Dactylis caespitosa

Madeleyrich & Wellington St. Strand

London, Published by H. Baillière Regent St. May 1843.

Notes on the Botany of H. M. *Discovery Ships, Erebus and Terror in the Antarctic Voyage; with some account of the Tussac Grass of the Falkland Islands, by* W. J. H.

(*Two Plates.*)

Since the days of the illustrious Cook, and of the distinguished men who accompanied that expedition, perhaps no voyage, undertaken for the purpose of scientific research, has ever excited so deep an interest in the public mind, or promised to yield such important results to navigation, and in the boundless fields of philosophical inquiry, as that of Captain James Clark Ross, in the South Polar regions, in H.M.S. "EREBUS and TERROR." The nature of the service renders it imperative that the main body of the information collected, and discoveries brought to light during this protracted voyage, should not be generally divulged till the return of the expedition; but through the medium of the *Admiralty*, the *Royal Society*, and the *Royal Geographical Society*, and the *British Association for the Advancement of Science*, and I may add of the daily Journals, several deeply interesting announcements have been already laid before the public, and it is now my agreeable task, with the sanction of the Admiralty, to make known to the botanical world some of the more important services rendered to that particular branch of science by the naturalists of this voyage.

What, it may be asked, can be expected in the way of Botany, in those dreary regions of the extreme south, where the rigour of the climate and the striking diminution of vegetation, in latitudes corresponding with those of the northern hemisphere, where vegetation is still copious, appear to offer an effectual barrier to the very existence of plants? Vegetable life is scanty, it is true, and the gallant commander of this expedition has pushed his researches into latitudes where every kind, even of aquatic vegetation, has ceased to exist, which is not the case in the north. There, far as

human perseverance has penetrated, the same officer performing the enterprize, plants have never failed. But the object of the present voyage was not solely to prosecute investigations in the extreme South Polar Regions. Magnetic observations had to be taken, and astronomical instruments fixed, in various localities in the temperate and even tropical portions of our globe, and various islands and continents have thus been visited where Flora is arrayed in a great diversity of forms, and where the naturalists of the ships could not fail to carry on their pursuits with pleasure and advantage.

It is, nevertheless, in those islands of the southern hemisphere, which encircle the South Pole, at various and generally very remote distances, of which the Straits of Magelhaens and Kerguelen's Island may be considered the northern limit, that the productions, though comparatively few, are the most remarkable, and from their isolated position, and geographical distribution may be studied with such advantages as no other parts of the world can offer. And, happily, we know that this important branch of Natural History has particularly engaged the attention of the officers of the "Erebus and Terror," and the results cannot fail to be important to that branch of science in which Humboldt has led the way.

It is not our object, or wish, on the present occasion, to notice, in a detailed manner, any of the botanical novelties discovered in this voyage; but rather to satisfy the public mind, that in a department of Natural History, which could only hold a secondary place in the great undertaking, much may be expected to appear, of high interest, when the voyage shall have been completed.

The following observations are wholly derived from the information given by my son, Dr. J. D. Hooker, Assistant Surgeon in H.M.S. "Erebus," the officer on whom the botanical researches expressly devolved. It is not for a parent to say how well he has performed that task: but it were injustice to withhold the fact, that but for the friendly aid afforded by the other officers of the expedition, and by Capt. Ross in particular, the botanical collections, the copious drawings made from recent specimens, and the knowledge

consequently acquired, would all be very limited, compared with what they actually are. A voyage of this kind is, in one respect, entirely different from inland travels; the scanty accommodation on board vessels of this description, where almost every inch of space is occupied by something connected with the chief objects of the expedition, being quite un like what the naturalist meets with on shore: still, these difficulties have been, in a great measure, obviated by the kind consideration of the commander, who has granted every facility possible for the advancement of each individual department of science, by his own personal exertions, and the free use of his cabin. The collections which have already arrived bear ample testimony to the correctness of the statement.

We shall pass slightly over the countries whose vegetable productions are familiar to us, to dwell the longer on the more interesting and less known southern regions.

Her Majesty's Discovery Ships, "Erebus and Terror," quitted the Medway on the 25th of September 1839, and proceeded to Madeira. To the chief botanist this was a new country, and though the season was mid-winter, he found the gardens rich with *Bananas, Vines, Daturas, Fuchsias, China-roses, Hibiscus and Heliotrope,* growing in the greatest luxuriance. A party was quickly formed to visit the well-known *Curral,* one of the most romantic spots in the island, about 3,500 feet above the level of the ocean, and where, at a favourable season, many good plants might be found; but now, in these elevated situations, little could be seen but a few *Mosses* and *Lichens,* with the withered remains of *Semperviva,* and other succulent genera.

The stay at Ténériffe, where the ships did not even cast anchor, was so brief as scarcely to allow of a dozen plants being gathered, besides a few curious *Algæ.* All was dried up and flowerless. From Ténériffe they shaped their course to the Cape de Verds; and here, could some weeks have been devoted to the mountains, an extensive harvest might have been reaped. The several islands of

this group present entirely different features. San Antonio is covered with wood. Sal, is a salt plain: Fogo, a stupendous active volcano, its reputed height 7,000 feet. San Jago resembles a desert, with a fertile and mountainous interior, and as this was the only island touched at, and Porto Praya, its capital being 12 miles from the rich central part, hardly any thing could here be accomplished in the way of botany. From the little that was seen of the island, the productions of its plain seem to resemble the vegetation of the great Sahara desert; of its valleys that of the tropics; while the mountains presented plants similar to what exist in the south of Europe, or the range of the Atlas; one hundred and ten species were secured in a good state, and about one hundred more were seen, but unworthy of being gathered. As the botany of the Cape de Verds is little known, and supposed to be peculiarly interesting, it may be well to state the opinion entertained by one of the officers, after remaining some days upon the coast, as to the best mode of proceeding in a climate, which has the character of being extremely unhealthy. A temperate and judicious traveller, he observes, might, in two months' diligent research, make a fine botanical collection in the country, by proceeding to the hills immediately after the rainy season, where he could employ his time in perfect safety, if he protects his person with a light parasol, and avoids over-fatiguing himself. Porto Praya ought to be his landing-place, and thence he might proceed to the town of San Domingo. The inhabitants of the country-houses, chiefly Portuguese, are most hospitable; food is abundant, and ponies, though bad, are very cheap. "No idea, whatever, of the interior, can be possibly obtained by the coast scenery, nor, for many miles round Porto Praya; for there is hardly a tree to be seen; grass and herbage are totally withered and dry; the very stones black and scorching from the heat of the sun. The thermometer generally rose to 86° and even higher, in the shade; and during the whole day, while on our excursions, we found it impossible to obtain the means of allaying our thirst, except by applying to

the poor negroes, (the population consisting of free negroes and a few Portuguese,) and they were invariably attentive and kind, offering oranges and Agua-ardiente, or assisting to extract the thorns and spines, that, piercing through the trowsers and stockings, penetrated the flesh. Among the more interesting trees, a solitary *Baobab (Adansonia digitata*, see Botanical Magazine, Tab. 2791 and 2792) was observed; not more than 60 feet high; but with a trunk 38* feet in circumference.

From Porto Praya the direction of the vessels was easterly to the desolate rocks of St. Paul, lying a little north of the equator, and admirably described by Darwin; they are few in number, about 60 feet high, and constantly washed by a tremendous surf. One boat was sent on shore, and another was intended to be despatched the following day with the botanist; but the difficulty and danger of landing were found so great, that the captain wisely declined allowing the attempt to be made again. A *Sea-weed* inhabits the marine edge, but it does not appear that any plant, even a *Lichen*, is to be seen on the rocks themselves.

Still steering westward, there existed at one time, an idea of landing on the Brazilian coasts; but the course was then southerly till they made the little solitary island of Trinidad in S. lat. 20°. This exhibited small patches of vegetation on the weather-side, which is flat, while the lee is very rocky and steep; so that the only spot where a landing could be risked was a rock, cut off, unfortunately, from the rest of the island by inaccessible precipices. Nought but a *Fern* and a *Grass*, and one or two species of *Cyperus*, were to be obtained. Near the summit of the highest hills and under some cliffs, about 2000 feet high, were descried small groves of trees,—apparently, for it was impossible to judge correctly, *Tree-Ferns;* while all along the shore lay the remains of prostrate, barked, white trunks, no living ones being

* Adanson speaks of one in Senegal, which measured 30 feet in the *diameter* of its trunk, and which he estimated to be five thousand years old!—"The oldest organic monument," says Humboldt, "of our planet."

discernible even in such places, not even with the aid of the telescope. After an ineffectual endeavour, by landing at another point, to reach the higher portions of the island in search of this grove of trees, the great intervening distance and the ruggedness of the country compelled them to turn back, nor was it till the signal was given, that the party reluctantly went on board. After a voyage, rendered very tedious by beating against the trade winds, the expedition reached St. Helena on the 1st of February, 1840.

It must be a source of great regret to every botanist to know that this insulated rock, originally inhabited by a most peculiar vegetation, should have had its productions so completely changed by the destruction occasioned by cattle, and by the introduction of European and other plants, especially forest-trees, that these now take place of the native growth. On this subject, much valuable information will, no doubt, be laid before the public. In the gardens of St. Helena there exists the strangest mixture of Tropical, European, and even Australian and Chinese vegetation, that can be conceived. *Acacias*, *Casuarinas*, *Pittospora*, *Billardieras*, *Dammaras*, from New Zealand, and *Eucalypti* from New Holland, flourish along with the *Scotch Fir*, *Plane*, *Peach*, *Apple*, *Pear*, and *Plum*; and there are *Scitamineæ* from the East Indies, and *Aroideæ*, with *Pine-Apples*, *Roses*, *Hydrangeas*, *Camellias* and *Tea-plants*. An excursion to Diana's Peak, and other places, with diligent search on the way, afforded the means of making a tolerable collection of such native vegetation as yet lingers on the islands.

On their way to the Cape, and within a few miles of it, the ships fell in with great masses of floating seaweed, all of one kind, a *Laminaria*, (*L. buccinalis?*) which had been torn up through the action of some great submarine force; and in several instances they counted, proceeding from one branching root, 6 great stems, the longest of which measured 24 feet, erect, smooth, and rather club-shaped, broadest above and fistulose; while from the summit of this again sprung the palmated blade or lamina, adding 6-8 feet to the

whole length. The quantity of parasitic and marine animals found among this seaweed was quite extraordinary, and added greatly to the collections. One plant alone afforded 4 parasitic *Algæ*, and 30 animals of different kinds.

The near approach to the Cape of Good Hope called up feelings in the mind of the young naturalist, which are best expressed in his own words, and can be only understood by one who possesses a keen relish for the wonders and beauties of Nature, and takes a pleasure in imparting to others a share of the knowledge and of the objects which he has himself attained by long and distant travel. The productions of the Cape were, however, not wholly unknown to the writer, for the frequent botanical communications of one dear and valued friend,* the discoverer of *Wardia* and other South African novelties, had rendered him familiar with many of the vegetable productions of the colony, and, as it were, familiarized him with the localities where they grow. "I have heard Naturalists," says our botanist, "complain of the tedium which attaches to a sea-voyage; but such persons cannot be *true* naturalists, or must be suffering from sea-sickness, a cause from which I have never suffered for an hour. I do not mean to say that I should not have been better employed and happier if studying botany at home, but I assure you, that my weeks fly away fast; though, from my being a slow worker, I have not much to show; and unaccountable as it may appear to you, when we draw near shore, I feel quite thrown out of my usual routine of occupation. I will own, however, that once my foot has touched *terra firma*, there is a sort of magic connected with it, that makes me grievously loth to quit it for sea again. There are those peculiar emotions consequent on visiting new countries for the first time, which are perfectly indescribable. I never felt as I did when drawing near Madeira, and probably never shall again. Every knot that the ship approached, seemed to call up new

* The Hon. W. H. Harvey, late Colonial Treasurer at the Cape of Good Hope; but at that time absent on account of ill-health

subjects of inquiry, and it still is the same with each new land and even barren rock. So it was when we made the Cape. On descrying Table Mountain, I could have sate (and did sit) for hours, wondering whether this knoll was covered with *Heaths* or *Rutaceæ;* if that rill produced the *Wardia,* or such a rock the *Andræa ;* where were Ludwigsberg and Wynberg, the *Tree Ferns,* and all those objects which the mind associated with our mutual pursuits and friends at home. No idea recurs so often, or is so delightfully pursued, as that of telling my relations of all that I have seen: never do I view a new prospect but I think what pleasure it will give to scan it o'er again, as it were, in their society; mapping out the spots where my specimens have been gathered, painting the scenery to one, and spinning to another the yarns of incidents that have befallen during my excursions, while my untravelled friends will look upon me as 'the monkey that has seen the world.'"

The botany of the Cape itself and of Table Mountain, which was the utmost extent of the young officer's rambles, is too well known to render it necessary to dwell upon the subject here, and we are approaching a country, of scanty vegetation, indeed, but replete with interest to the philosophical inquirer, from its size, 200 leagues in circuit, its position, (N. lat. 49° 20′, E. long. 69° 30′) so widely severed from other lands, and its most peculiar, though limited Flora, namely, Kerguelen's Island, or Desolation Island. We are not aware that any thing was previously known of its vegetable productions, save what is said respecting them in Captain Cook's third voyage, where it is observed, "Mr. Anderson, my surgeon, who had studied Natural History, lost no opportunity, during the short time we lay at Christmas Harbour, of searching the country in every direction. I insert his observations in his own words:—'Perhaps no place hitherto discovered in either hemisphere, under the same parallel of latitude, affords so scanty a field for the naturalist as this barren spot. The verdure appears, when at a little distance from the shore, as if it would promise some herbage,

but in this we were deceived. For, on landing, we found that this lively colour was occasioned only by one small plant, not much unlike a *Saxifrage*, which grows in spreading tufts to a considerable height up the hills. It forms a surface of a pretty large texture, and grows on a kind of rotten turf, into which one sinks a foot or two at every step. This turf, dried, might, in case of necessity, serve for fuel, and is the only thing we met with here which could possibly be applied to this use.

"'There is another plant, plentifully scattered about the boggy declivities; it grows to near the height of 2 feet, and resembles a small cabbage when it has shot into seed. The leaves about the root are numerous, large, and rounded, narrowest at the base, and ending in a small point. Those on the stems are much smaller, oblong, and pointed. The stalks, often 3 or 4, all spring separately from the root, and run into long cylindrical heads, composed of small flowers. This plant has not only the appearance, but the watery acrid taste of the antiscorbutic plants, yet differing so materially from that whole tribe, that we regarded it as a production entirely peculiar to the place. We ate it frequently raw, and found it almost like the *New Zealand Scurvy-grass*. But it seemed to acquire a rank flavour by being boiled: which, however, some of our people did not perceive, and esteemed it good. If it could be introduced into our kitchen-gardens, it would probably so improve by cultivation as to become an excellent herb. At this time none of its seeds were ripe enough to be gathered and brought home to try the experiment. Two other small plants were found near the brooks and boggy places, and eaten as sallad; the one almost like *garden-cress*, and very fiery, the other quite mild. This last, though small, is in itself a curiosity; having not only male and female, but what the botanists call *androgynous* plants.

"'A coarse *grass*, which we cut down for the cattle, grows pretty plentifully in a few small spots about the sides of the harbour, with a small sort, which is rarer; and upon the flat ground a sort of *goose-grass*, and another small production

much like it. In short, the whole catalogue of species does not exceed sixteen or eighteen, including some *Mosses* and a beautiful *lichen*, which inhabits the rocks higher up than any other, nor is there the least approach to a *shrub* in the whole country.'"

But to return to our voyagers. The "Erebus and Terror," having quitted the Cape of Good Hope on the 6th of April, 1840, spent from the 12th to the 17th of that month in crossing the Agulhas Bank, which afforded ample scientific occupation, in its immense masses of *Macrocystis pyrifera*,* (that enormous seaweed, supposed to be the longest vegetable production in the world, Sir Joseph Banks having judged that, in the Great Pacific Ocean, it attains an extent of 1,500 yards), and in the great variety of marine animals which this *Alga* harbored. On the 21st they passed to the southward of Marion Island, formed of flat terraces of volcanic rock, with high, cone-shaped, often red mountains, towering to a considerable elevation. Colonies of Penguins were on all the shores. The "Erebus" was hove to, with the intention of landing next morning, and they began dredging in 96 fathoms, between Marion and Prince Edward's Islands.† The dredge came up, filled with white coral and thirty-seven distinct species of marine animals. Next morning, however, the voyagers found themselves driven so far to

* This gigantic seaweed is found throughout the Great Pacific Ocean, and in the Atlantic from the equator to the 45th degree south latitude: but its length may perhaps be greatly over-estimated, judging by an observation made by M. Gaudichaud, the botanist to Freycinet's voyage. He says, that "when near Cape Horn and the Falkland Islands, the ship steered through wide banks of *Macrocystis pyrifera*. Two-thirds of each plant, obeying the laws of specific gravity, floated in a perpendicular position, not however attached to the bottom of the ocean: and this upright position has perhaps induced the belief that the extraordinary seaweed in question grew at an immeasurable distance from the surface."

† In the excellent Admiralty Chart of the South Pole all the places here mentioned may be seen accurately laid down, together with the tracks of H.M. Discovery Ships in 1840, 41, and 42, till their arrival at the Falklands.

leeward of the island, that it would have required too long a time to beat back; thus landing was rendered impracticable. Early on the 26th, after encountering some very severe weather, the westernmost of the Crozet group was descried, and on the 1st of May they hove-to at Possession Island; but the wind was too strong (it must be remembered that the season was mid-winter in these latitudes) to allow of the attempt being made without danger of the ships being blown off, and having to beat up again, which must have occasioned many days' delay. The Island, indeed, seemed perfectly barren of aught but a few coarse tufts of *grass*, and a *moss*-like substance that clothed the rocks and vallies—all was volcanic.

On the 6th of May, the long-wished for Island of Desolation, or Kerguelen's Island, was descried, and the ships first made Bligh's Cap, to the westward of it; but the weather became so thick that it was necessary to keep off from the direction of the land, for evening was approaching. On the 8th, they were blown eighteen miles to leeward of Christmas Harbour; but before night, they retraced their way, and hove-to off the mouth; when again, heavy gales coming on drifted them in two days, one hundred and fifty miles from the desired haven, and the 12th of May arrived ere they found themselves at anchor in the outer bay of this singular harbour, whence they had to warp up the head of it. A faithful representation of one side of the scene around them, which was most remarkable, is given in Cook's third voyage. The outer basin is about two miles in diameter, bounded by lofty cliffs of black rock, from which the land rises in successive ledges, till it terminates in table-topped or peaked mountains, 1,500 to 2,000 feet high; and the effect of this was the more remarkable, from the nearly equal distribution of rock, snow, and vegetation. "Often as I have sate," says the botanist, "on the summit of the cliffs which hem in this iron-bound bay, it was impossible to grow tired of watching the fearful surf, continually roaring and lashing against a mile of precipices, surmounted by high, snow-capped mountains. Whenever a gale blows from the south-west, which is contin-

ually the case at this season of the year, the wind is concentrated by the hills of this bay, and carried with redoubled violence into Christmas Harbour, where it spends its terrific fury, rendering all our anchors and cables barely available for securing the ship, and sometimes forbidding, for many days, any communication with the shore.

"The first plants to be seen, on landing, are, of course, *Sea-weeds* and *Lichens* on all the rocks; then come a long *Grass*, an *Agrostis*, a little *Ranunculus*, and more abundantly than either, a *Composite* plant, forming small turfy slopes and ledges, of a bright green hue, among a mass of black bog-earth, covered with a *Callitriche* and *Portulaceous* plant. Conspicuous amongst all these, is "*the* CABBAGE," throwing out its thick round roots, 1-2 inches diameter and exposed from a few inches to 2 or 3 feet, along the ground, bearing at its extremity, large cabbages, sometimes 18 inches across, of obconical or spathulate, rounded, concave, green coriaceous leaves, enfolding a white heart, which eats like coarse, tough mustard and cress. From the sides of the heads, issues one, or more, long leafy stems, bearing such spikes of seed-vessels as my specimens, sent to the Admiralty, will show. The root tastes like *Horse-radish*, the seeds like those of *Cress;* but the leaves are the grand fresh provision, and were so extremely relished by the sailors, that during the whole of our sojourn in that barren land, they were always boiled with the ship's company's beef, pork, or pea-soup. They taste to me very like very stale cabbage, with a most disagreeable essential oil, which resides in cavities in the parenchyme of the leaves, and which are very conspicuous on making a transverse section of the heads of leaves. This oil gives to this vegetable a curious anti-heartburn property. Altogether, I consider this cabbage a most invaluable anti-scorbutic, which few persons do not like, or cannot bring themselves to eat. Near the sea it grows in great abundance, and ascends to the tops of the hills, 1,500 feet high, where it is small and hairy, but retains all its properties.

"The next most remarkable plant is a little tufted *Umbelliferous* one. It forms long brown patches on the shores, the banks and rocks; sometimes covering many acres of land with deep cushions, on which you may, from their elasticity, lie with comfort, though, at other times, you sink up to the middle. The tap-roots of old tufts strike many feet into the soil which its own self has formed (owing to its property of shooting annually upwards) from the withered tops of the previous years' shoots, like *Bryum Ludwigii.* The flowers are scarce and very inconspicuous. It has no smell, nor any essential or other oil; but is remarkable as one of a group of *Umbelliferæ*, peculiar, I believe, to the southern hemisphere, and there only found in exceedingly alpine or antarctic regions.*

An *Acæna* is the next plant of frequent occurrence, growing in bogs, or creeping over the dried soil, like *Comarum* at home, of which it put me much in mind. All the above-mentioned species are nearly confined to the vicinity of the sea; the *Cabbage* and *Halorageous* species alone being found at any height above its level, and all are frequently exposed to the salt surf, apparently with impunity.

"At an elevation of about 300 feet above the sea, and also near it, I observed a small tufted *Silene* (*?*), two *Grasses*, one of them a little *Poa*, and the other a most beautiful (*Aira?*), with remote horizontal spikelets, on long peduncles; the latter is rather scarce, and certainly is the most delicate and pretty plant on the island, it grows in marshy places. On the banks of two small lakes, between Christmas Harbour and North-west Bay, a little *Juncus* occurs, and in the lakes a most remarkable plant, which resembles *Subularia aquatica*, forming green patches, a foot or 2 feet beneath the surface of the water, on a loose muddy bottom. There it flowers; the close imbrication of the calycine sequents and those of the

* The plant here alluded to is probably a *Bolax*, and allied to, though different from the remarkable "*Balsam Bog.*" (*Bolax glebaria*), of the Falkland Islands.—Ed.

corolla, protecting its stamens from the influence of the fluid. Each germen contains a small bubble of air, generated, of course, within the ovary. Winter seems to be its season of inflorescence; for I found it in blossom after a long search, under a coating, 2 inches thick, of ice. So far as I have hitherto examined this plant, it seems to differ in character from any Natural Order; though, like *Limosella*, it may be nearly allied to *Scrophularinæ*, having also some of the peculiarities of *Lentibularinæ* and *Primulaceæ*.

"The seasons are evidently late on this island, and the winter comparatively mild. We have had frequent hail and snow-storms, but these seldom lasted more than a few hours on the low ground, the sun, wind, and rain soon removing the snow, with apparently slight injury to vegetation. There was but one strictly aquatic plant, and one entirely confined to dry land, all the rest, so far as I could discover, preferring a moist and peaty soil. Of *Jungermanniæ* and *Mosses* there was a considerable number of species, all belonging to alpine or arctic forms; especially the genus *Andræa*, and another, approaching *Scouleria* in characters. The *Lichens* appear to form a much larger component part of the vegetation at Kerguelen's Island than is the case, comparatively, in other parts of the world; especially when it is remembered that, from the absence of trees, there can be no parasitic species. The rocks, from the water's edge to the summit of the hills, are apparently painted with them; their fronds, in general, adhering so closely to the stones, that it is only with difficulty they can be detached; in other cases, they seem to form part of the rock, which, from its excessive toughness and hardness, almost defies any attempt to procure such specimens as shall be at all satisfactory. At the tops of the hills they assume the appearance of miniature forests on the black rocks, and nothing can be prettier than the large species, with broad black *apothecia*, which covers all the stones at an elevation of from 1,000 to 1,500 feet. A smaller kind, like a little oak-tree, grows in spreading tufts (also upon stones), and is of a delicate lilac colour. Near the sea, the plants of

this tribe are generally more coriaceous; especially a yellow one, that there forms bright patches on the cliffs. In the caves, also, on the coast, a light red species is so abundant as to tinge such situations with that hue, and many other sorts inhabit the rocks and their crevices.

"*Sea-weeds* are in enormous profusion; especially two large species, the *Macrocystis pyrifera* and *Laminaria radiata* (*?*). The former forms a broad green belt to the whole island (so far as seen), of 20 or 30 yards, within 20 feet or so from the shore. Here the branches are so entangled, that it is sometimes impossible to pull a boat through the mass; and should any accident occur outside this girdle of sea-weed, its presence would form an insurmountable obstacle to the best swimmer's ever reaching land. On the beach, the effect of the surf, beating it up and down, affords a very pretty appearance, but not so striking as is the view, from a slight elevation, of the Bay, with this olive-green band running round it. The sea-birds, when on the water, always fly over or dive under it, to re-appear on the other side. The *Laminaria* hangs down from every rock within reach of the tide; its digitate fronds, of a very thick coriaceous consistence and of great weight, are perpetually in movement from the lashing of the surf, and yet, thanks to their sliminess and strength, always uninjured. It protects thousands of *Limpets*, that would otherwise be exposed to the attacks of the gulls and other sea-birds. To collect our food of *Patellæ* was often hard labour, as we had to remove the tough and heavy masses of this weed to get at them."

Such were the first impressions, made upon the botanist, by the vegetation of Kerguelen's Island, which a two and a half months' stay gave pretty good opportunities of investigating; and the specimens sent home to the Admiralty testify that the time was not idly spent. That it should have been practicable to have gathered them, with flower and fruit in the very middle of winter, shows a great peculiarity in the climate. The latitude of this island, in the Southern Hemi-

sphere, is as nearly as possible the same as that of our Channel Islands in the Northern; and these, though far more limited in extent, produce, as stated by Mr. Babington, about eight hundred and forty species of *phænogamous* plants: whereas, in Kerguelen's Island, though the Flora was doubled by the researches of the "Erebus and Terror," the number of species does not exceed thirty-two, while the proportion of *Cryptogamic* plants is very great; from which circumstance a very rigorous climate might be inferred. Such is not, however, the case: the winters, though stormy, are not so severe as to destroy the power of vegetation, or even materially to retard inflorescence. The paucity of plants must be accounted for from other causes.

We have reason to know that the peculiarities of soil, climate, volcanic action, &c. of this remarkable spot, as affecting its vegetable productions, are fully discussed in the journal of the botanist of this expedition, and some highly interesting results are deduced. We have no desire to anticipate that information, but are unwilling to withhold the following remarkable fact. "Cook visited this island in December, the very height of summer, when he met with only eighteen species of plants (as before stated) including *Cryptogamia*: of these he mentions five flowering plants in blossom. Of these five, I have, in May, gathered three, abundantly in flower, and two others, the *Cabbage*, and, I suppose, the *Callitrichoid* plant, just running into seed. Of these five again, two remained in bloom till July 20th, and none but the *Cabbage* had, till that time, fully shed its seed. Hence it would appear that few of the vegetables had performed their most important function, before the middle of winter." Winter botanizing in these antarctic regions, is, however, no sinecure, as the following extract will show.

"During my stay at Kerguelen's Island, I devoted all my time to collecting everything in the botanical way. The Captain kindly took off all restriction, permitting me to go on shore whenever I liked. My rambles were generally solitary, through the wildest country I ever beheld. The hills were

always covered with frozen snow, and many of my best *Lichens* and *Mosses* were obtained by hammering at the icy tufts, or sitting on them till they thawed. The days were so short, and the country so high, snowy and barren, that I never could go to any great distance from the harbour, though I several times tried for it, by starting before daylight. As far as I proceeded, the vegetation did not differ from that of the Bays. A boating excursion was undertaken to explore to the southward of the island. I volunteered to accompany it, but was advised to wait for a second, and my superior officer, the surgeon, went. The party returned after some days, without having accomplished anything; the officer who led them found it impracticable for loaded men to travel by land, over rocks, round bays, and through snow-drifts; and when they took to the boat, the furious gales almost drove them out to sea. I went several boating excursions, and on one was dismasted and nearly swamped, so Capt. Ross would allow no more to be sent. Two *Lycopodia*, (one, a splendid species,) and a *Fern*, were on this occasion added by Mr. M'Cormick to my collections."

Coal and *fossil-wood* also abound in this most singular country, the latter was found lying in immense trunks, bedded in the solid basaltic rock!

The botanical productions of this large island may be thus summed up. There were gathered in all, about one hundred and thirty plants, and in the following proportion. "One *Fungus*, one *Chara*, thirty-eight species of *Alga*, and thirty of *Lichens*, ten of *Conferva*, one *Marchantia*, and ten *Jungermanniæ*, twenty-three *Mosses*, two *Lycopodia*, and a single *Fern*, five *Grasses*, and one *Juncus*.—One species in each of the following Natural Orders,—*Amaranthaceæ ? Cruciferæ*, *Ranunculaceæ*, *Compositæ*, *Portulaceæ*, *Rubiaceæ*, *Halorageæ*, *Umbelliferæ*, *Rosaceæ*, and *Caryophylleæ ?* Of two plants it was not possible to define the affinities.

I did my best to collect every thing that Kerguelen's Island afforded, not neglecting the most insignificant plant,

often walking on the beach, gathering sea-weeds, my feet in the water, and wet to the skin with the dashing surf; I left not a hole unsearched, or stone unturned, and on those days when violent gales and snow-storms forbade all communication with the shore, I spent my time, and happily, too, in drawing, making analyses, and describing the specimens which I had brought on board. There is some danger, however, that inaccuracies may have crept into my work, for the rolling of the ship often obliged me to hold on, while thus employed, and to have my microscope lashed to the table, which renders dissection, under the glass, peculiarly difficult."

A *Ward's case*,* was brought away, filled with all the plants that could be found, all dug up and packed by the same active pair of hands as made the above mentioned drawings and descriptions. The Captain had kindly harboured this box in his cabin during the continual foul weather; but, unfortunately, just before reaching the next port, (Hobarton, Van Dieman's Island,) a fine day induced him to set

* The dreadful weather which the ships encountered in the inhospitable Antarctic Regions was highly unfavourable to the preservation of living plants; which it has been most earnestly the wish of the Commander to send to the Royal Botanic Gardens of Kew. With difficulty the *Kerguelen's Island Cabbage* was kept alive till the expedition reached Van Dieman's Island, when it was prudently planted in the Governor's garden, and soon sprouted. Seeds were transmitted to England, but though treated with the greatest care, and tried in several places, they showed no symptoms of germinating, though they looked good to the eye. Perhaps they were heated in passing through the Tropics; for other seeds, carried on by the officers, and kept for twelve months, vegetated on being set at the Falkland Islands; but again, these growing plants did not survive the voyage to England. There is no plant that would have given us greater pleasure to have introduced to our Gardens, for, by cultivation, there is reason to believe it will prove a valuable esculent. Farther, it belongs to a perfectly new genus of *Cruciferæ*, which Mr. Anderson, the Surgeon and Botanist in Capt. Cook's third voyage, designed (according to his *MSS.* deposited in the British Museum,) to have dedicated to Sir John Pringle, President of the Royal Society, and an eminent physician of the day.

the plants on deck, when a sudden tempest ensued, which not only blew the ships off the land, but did the valued case considerable damage.

Van Dieman's Island, from its vast extent, presents a wide field for the naturalist, and though Labillardière, Brown and Cunningham have laboured there, an ample share yet remains for future investigators. But as our object is mainly with Antarctic vegetation, we shall merely observe that what with the collections of the "Erebus and Terror," and those made by the unwearied exertions of Ronald Gunn, Esq., during many years, and placed at our disposal, there exist in this country ample materials for a Flora of that most interesting colony, such we trust as will form a part of the publication of this extended scientific voyage.

Dreadful weather, had, however, to be endured, between the 30th of July, when the ships quitted Kerguelen's Island, and the 16th of August, when the river Derwent received them. They had ran a thousand miles a week for three successive weeks, and were just in sight of Van Dieman's Island, when that gale, which did so much injury to the plants in the Ward's case, came on and drove them out to sea again, carrying one poor fellow overboard, and often sweeping the decks fore and aft. Happily the "Erebus" proved herself a most admirable sea-boat, riding like a bird on the waves, and when struck and washed by the great seas that broke over her, only staggering a little, till a port was knocked out, by which the immense body of water was suffered to escape.

Nearly three months were spent in Van Dieman's Island, and on the 12th November, 1840, the "*Erebus* and *Terror*" sailed down the Derwent, on their way to the extreme southern regions of our globe, amidst the enthusiastic cheers of the people of Hobarton, and accompanied for 30 miles by his Excellency, Sir John Franklin, of whom it need hardly be said that he has taken the deepest interest in the success of the voyage, and, assisted by the inhabitants generally, rendered our countrymen's stay in that colony peculiarly agreeable. On this memorable cruize, one of the grand objects of

the expedition was fully accomplished, that of ascertaining the precise bearing of the South Magnetic Pole, and though it could not be supposed that such a voyage should be rich in vegetable productions, and although these were almost wholly derived from two islands; yet, their character is highly interesting. Our bold voyagers penetrated as far as 78° S. latitude, 7 degrees farther than Capt. Cook was able to accomplish, and nearly 4 degrees beyond the no less enterprising Weddell; they discovered, and ran along a vast extent of new continent, covered with everlasting snow, yet presenting to the view mountains of vast magnitude, from 9, to 12,000 feet in elevation, and one of them an active volcano!

On the 20th of November, eight days after quitting the Derwent, and in S. lat. 51° long. 166°, the ships reached Lord Auckland's Islands, where they remained till the 12th of December. This gave ample time for botanical investigations, and the opportunity was not wasted. About one hundred and twenty species of plants were added to the Herbarium (exclusive of *Algæ*,) and most copious notes and drawings were made from the recent specimens, together with minute observations on their distribution according to altitude, &c. Some remarkable genera grow at Lord Auckland's Islands, and two *Ferns*, which, from their caulescent stems, though they are small compared with the tropical *Tree-ferns*, may almost be called arborescent. Among the *Mosses*, are three undescribed species of *Andræa*, a fine *Conostomum*, *Bartramia*, two *Hookeriæ*, *&c.* A bird's eye view of the principal island presents about an equal distribution of wood, shrub and pasture-land; but with the mountains nowhere rising to such a height as to be destitute of grass to their very summits.

On landing, what may be considered the maritime zone, extending from the beach to the border of the woods, a very narrow belt, afforded *Ranunculus*, *Cardamine*, *Stellaria*, two *Acænæ*, *Portulaca*, *Lobeliacea*, *Callitrichea*, *Bulliarda?* and three *Compositæ*, two of which are also found on the hill-tops, *Gentiana*, *Myosotis*, *Polygonea*, *Veronica*, *Plantago*, *Amarantha-*

cea, Poa, Urtica, Pteris, Stegania, and two *Orthotricha.* The woody zone almost immediately commences, and contains *Myrtaceæ, Araliaceæ, Coprosma, Ozothamnus, Epacridea, Veronica,* two *Orchideæ, Carex,* and a nearly allied genus, two *Aspidia* with an arborescent caudex, two *Asplenia, Grammitis, Polypodium,* with many *Mosses* and *Jungermanniæ,* occupying the trunks of trees, and coating the earth in dense tufts, insinuating themselves into every vacant space and crevice, and in their decay, together with the fallen foliage of *Dicotyledonous* plants, forming a rich damp vegetable humus. It is hard to say, in this zone, whether the trunks of trees, the *Ferns,* or the plants of the lower Orders, occupy the greatest space in the forest. The most arborescent kinds are the *Veronica,* the *Araliaceous* plant, the *Myrtaceous* and the *Epacrideous,* and these are often so dense as to exclude the sun's rays from the ground. The predominance of *Ferns* extends for about 300 yards from the beach.

Next to the trees comes a shrubby belt, not indeed clearly defined, for it contains many of the trees of the lower region, (the arborescent *Veronica,* however, wholly excluded) though in stunted forms, mixed with a curious *Schizæa,* the *Coprosma* of the higher levels, a large *Lycopodium,* a blue-flowered *Veronica,* &c. This bushy region contains vacant spaces of black, almost naked earth, in which are imbedded the dead roots of existing species of trees. Why the soil in such situations should remain thus bare, is not easily to be accounted for, but their appearance is highly peculiar, being often spotted by a white *Lichen,* and occasionally exhibiting plants which are either peculiar to it, or very scarce elsewhere ; as *Gentiana,* the *Schizæa* above-mentioned, *Astelia, Drosera,* an *Epacrideous* shrub like *Empetrum,* and a plant of *Stylidium.*

The upland or subalpine district then follows, consisting of an open space, chiefly clothed with a species of *Bromus,* a *Hierochloe,* and in some spots two *Umbelliferous* plants in dense patches, an *Araliaceous* one, a *Ranunculus,* some *Compositæ* ; but no bog-plants like *Sphagnum, Junceæ, Drosera* (of which

the solitary specimen discovered was unfortunately lost) *Stylidia*, *Cheilanthes*, *Lichens* and other plants, while the few woody species are wholly concealed in the glens.

Above this again comes the *Alpine Region*, wholly confined to the summits of the hills. No other is equally distinctly marked as to botanical limits, probably owing to the existence of several long low ledges of rocks, which are basaltic, and some of them columnar, and which produce a peculiar vegetation, partly indeed subalpine; but the following plants do not appear to descend below them, except indeed the two *Compositæ* above-mentioned, which, like the *Thrift* and *Rose-root* of Europe, seem to be both alpine and maritime. *Ranunculus* two species, *Cardamine*, *Acæna*, *Geranium* (!) *Potentilla*, *Araliacea*, *Gentiana*, *Plantago*, four *Compositæ*, *Epilobium*, two *Junci*, *Hierochloe*, *Agrostis*, *Lycopodium*, *Andræa*, *Didymodon*, *Conostomum*, *Bartramia*, *Bryum*, *Polytrichum*, with many other *Mosses* and some *Lichens*. In Lord Auckland's Islands an *Asphodelous* plant is very abundant, holding the place of *Narthecium* in our northern hemisphere; it grows from the seashore to an elevation of 800 feet above the level of the sea, and is extremely handsome, forming a conspicuous feature in the landscape from its great profusion; which is indeed so remarkable in some places, that at the distance of a quarter of a mile, the ground seems spangled with gold through its yellow blossoms. These, moreover, exhale a slight but agreeable fragrance. Three species of *Veronica* are also showy, especially the maritime one, owing to the abundance of its flowers, which make the tree look as if powdered. The blue of the alpine species is very intense, and sometimes is a bright blue azure. The *Sea-side Gentian* is as lovely a plant as can be imagined, with most delicate inflorescence and foliage that has a waxy appearance. Two of the *Compositæ* were among the handsomest productions of the island. Notwithstanding, however, the beauty of these and some others, the general aspect of the vegetation is sombre and of a much browner tint than even in Van Dieman's

Island. The prevalence of the *Myrtaceous* plant gives a lurid hue to the landscape. Of the fine *Dracophyllum* only the younger leaves are green, the older ones turn red and brown, and then drop off in immense numbers; so that on penetrating the woods they are gloomy in the extreme, from the prevalence of fallen foliage, and the general absence of the sun's cheerful rays. Few of the plants are fragrant; the *Asphodelous* plant above-mentioned is, also the white-flowered *Veronica*, whose scent resembles that of our *Jasmine*, while the alpine *Hierochloe*, like the species of our northern hemisphere, diffuses a most delicious odour. Of fetid plants there are not a few, among such the *Coprosmas* stand pre-eminent; the *Araliaceæ* too are disagreeable, and so are the *Gentians*, when drying.

After quitting Lord Auckland's Islands, the expedition visited Campbell's Island, in S. lat. $52\frac{1}{2}^0$, and anchored in the South Harbor. Here they remained only three days, but made the best use of their time in collecting the vegetable productions, which, as may be inferred from the geographical position, are, in many respects, similar to what prevail in the group they had left. Campbell's Island is, however, much smaller and very rugged, its mountains attaining a height of 1,200 feet; yet some additional species were gathered, especially *Mosses*. The two caulescent *Ferns* are abundant here also. "The valleys were, unfortunately," writes the botanist, "completely devastated down each side of South Harbor, where we lay, by fires that had been kindled by the sailors. The windward side of the island presents many anomalies. In particular, it may be mentioned that, probably owing to the heavy south-west gales, it is totally devoid of every thing approaching to a shrub, and many plants which, on ascending the leeward side of the island, are only seen on arriving at the summits, here descend to within a hundred feet of the sea: such as the little *Boragineous* plant (*Myosotis?*), several grasses, &c.: thus the two sides of the island exhibit very different distributions, from local circumstances."

On leaving Campbell's Island, 17th December, the Expedition bade farewell to terrestrial vegetation; and, when about the parallel of Emerald Island in 57°, but at some distance from it, they passed some *Sea-weed*, this proved the last trace of vegetation of any kind that was seen. On the 28th, in lat. 62° 40′, the first of the icebergs came in sight, and henceforth these were their constant companions; and on the 2d of January, 1841, they procured a piece of rock from off one of them. The latitude of Captain Cook's farthest south was passed on the 11th, and at 2 P.M., the navigators caught the first glimpse of an immense range of snow-capped mountains to the southward. On the 12th, in lat. 71° 49′, long. 170° 52′, they landed for a few minutes on an island off the coast, all snow, with no trace whatever of vegetation. It cannot even be stated that the remarkable substance, *Red Snow*, so common in high northern latitudes, as also in South America, and respecting the animal or vegetable structure of which, naturalists are as much in doubt as ever, exists in the extreme southern regions. On the 24th, having attained lat. 74° 23′, long. 175° 55′, they beat Weddell, the individual who had reached a higher southern position than any other; and on the 27th, in lat. 75° 47′, and long. 168° 58′, they effected a landing, with the utmost difficulty, on a little island, entirely clad with snow, save on the perpendicular cliffs where it cannot lie. The coast was lined with ice, but interspersed with fallen masses of stone, rocks, and sand, and it was impossible to advance a yard into the interior; but far as eye could reach and glasses could range, not a particle of vegetation existed.

It was on the following day, January 28th, in lat. 76° 57′, long. 169° 25′, that our countrymen first descried that active volcano, which could not fail to form a spectacle the most stupendous and imposing that can be imagined; whether considered in regard to its position, 77½° S. lat., or in reference to the fact that no human eye had ever gazed upon it before, or to its elevation of 12,600 feet above the level of the sea. What increased the wonder is, that it is but one of a stupen-

dous chain of mountains, a portion of a new continent, of vast but undefined extent, the whole mass, from its highest point to the ocean's edge, covered with everlasting snow and ice; the sun (at that season) never setting, but day and night exhibiting the same spectacle of the extremes of nature's heat and cold. In mentioning such a phenomenon, I may be allowed to make the following extract from my son's letter:—"The water and the sky were both as blue, or rather more intensely blue than I have ever seen them in the tropics, and all the coast one mass of dazzlingly beautiful peaks of snow, which, when the sun approaches the horizon, reflected the most brilliant tints of golden, yellow and scarlet; and then to see the dark cloud of smoke, tinged with flame, rising from the volcano in a perfect unbroken column; one side jet-black, the other giving back the colours of the sun, sometimes turning off at a right angle by some current of wind, and stretching many miles to leeward! This was a sight, so surpassing every thing that can be imagined, and so heightened by the consciousness that we have penetrated, under the guidance of our commander, into regions far beyond what was ever deemed practicable, that it really caused a feeling of awe to steal over us, at the consideration of our own comparative insignificance and helplessness, and at the same time an indescribable feeling of the greatness of the Creator in the works of his hand." Such a scene must be reckoned an ample compensation for the absence of all vegetation.

On the 29th the expedition was suddenly obstructed in its southerly course by an object scarcely less wonderful, a perpendicular barrier of ice, of unknown extent, whose face presented a wall of 160 feet in height. To this Captain Ross gave the name of the Victoria Barrier: it runs in an easterly direction from Mount Erebus, as the volcano was called, in the 78th degree of south latitude. This huge rampart they coasted from the 170th parallel of East longitude to nearly 165° W., hoping to find a passage to the south, but none appeared; and at length, owing to the lateness of the season and the impossibility of obtaining safe shelter for the ships

during the winter months (no small proportion out of the twelve), they took a northerly course, and on the 7th of April cast anchor, for the first time since leaving Campbell's Island early in December, off the Government Paddock, Hobarton, Van Dieman's Island.

A short time only was here allowed for the needful refreshment and repairs, when the "Erebus" and "Terror" sailed for Sydney, where numerous excursions were made, and plants collected, though few of these could have the charm of novelty; and after much kindness received from Messrs. M'Leay (father and son), they then pursued their course to the Bay of Islands, New Zealand. This country presents a good field for the naturalist, but unfortunately, the destination of the ships was restricted to the Northern Island, to which the researches of the botanist were consequently confined. Here resides one of the most amiable and liberal of men, Mr. Wm. Colenso,* of Piauhy, who has studied plants with great success, and sent home rich collections of the vegetable productions of the island. He accompanied the scientific gentlemen of the expedition in their reseaches, and has received such a stimulus from their society, that it is not too much to predict he will use his best exertions to obtain plants from every part of this highly interesting group of islands. And thus, by his means, in addition to what has been effected by Sir Joseph Banks, by Forster's voyage, by the late excellent Menzies (who chiefly botanized in the Southern Island), by the brothers Cunningham, and by Dr. Dieffenbach, Mr. Edgerley, our good friend Dr. Sinclair, and the officers of the *Erebus* and *Terror*, there is already collected a full mass of materials for a *Flora of New Zealand*,— a Flora, the more called for, now that the Northern Island and the northern portion of the Middle Island are becoming so thickly colonized.

The second voyage to the extreme south was commenced in November, 1841, when the vessels weighed anchor, with

* Some of the many discoveries of this gentleman are published in the *Icones Plantarum* (the late Nos.), and in the *London Journal of Botany*.

the design of proceeding to the Chatham Islands, in lat. 44°. S., and long. 176°. W., but the weather proved so thick and stormy, that to reach them was impossible, although H.M.S. *Favourite* had been appointed to meet the expedition there, and receive their despatches for England. Foiled in this intention, they proceeded due south, passing Bounty Island and Antipodes Isle, until they were entangled in Pack ice of immense extent, between lat. 62°. and 68°., from the 18th of December, 1841, till February 2nd, 1843. After this, they with difficulty reached a little higher southern latitude, namely 78°. 10′. than where they had been checked the preceding year, and more to the east, when they were again brought up by the same impenetrable Victoria Barrier. So late in the season, it was hopeless to search for winter quarters, and they returned northerly to the parallel of 60°, when they took an easterly course, doubling Cape Horn, and on the 6th of April, 1842, reached Berkeley Sound, in the Falkland Islands, the first land that had greeted their eyes since quitting New Zealand, a period of one hundred and thirty-eight days, the whole of that time having been passed under sail, or in the Pack ice, or among Icebergs. Indeed, none but those employed in this voyage can at all appreciate the difficulties and hardships that were endured. In order that this little notice may record some of the perils which have attended this Antarctic exploring voyage, we give the following extracts from a letter published in the Athenæum of March, 1843, which bear all the stamp of a faithful narration, and may tend to convey a faint idea of them.

" From the Bay of Islands, it had been Captain Ross's intention to proceed as far as 150th degree of west longitude, and then to go south. The winds were at first favourable, and the weather fine, though occasionally thick fogs came on, which, during their continuance, obliged us to be constantly firing muskets, beating gongs, and tolling bells, to keep company with the *Erebus*. On the 13th of December, we reached the parallel mentioned, and proceeded south, encountering the Pack ice in lat. 62½°. and long. 147° W., which was con-

siderably to the northward of where we made it last year. We pursued our way through it very well, till the 23rd, when the ice became thick and heavy, and we were unable to get on, except a few miles now and then, by boring and shoving along with poles. We crossed the Antarctic circle on the 31st, both ships made fast, at the same time, to one floe. We saw the old year out and the new year in, on the ice between the vessels; and on the evening of the 1st, had a ball there, and kept up the dancing till three in the morning. So you see that, while blocked up by frost on every side, we had some fun; but that was the first and the last of it. We cast off occasionally, but were obliged to make fast again.

On the 18th of January, we cast off, and on the 20th, encountered a very heavy gale with a tremendous swell, which rendered our situation for thirty-six hours truly perilous; it was more like the effect of an earthquake, than being tossed about by the sea; the immense blocks of ice threatening, as it were, to grind us to powder. Indeed, no ordinarily built ship could have stood it for an hour. Soon after the commencement of the gale, the *Erebus* had her rudder rendered useless, by the head of it being wrung, and ours was completely torn from the stern-post, although the fastenings were the same size as those used in line-of-battle ships. There we were, two ships in an unknown sea, drifting about at the mercy of the winds and, I may say, of the ice, without being in the slightest degree able to assist ourselves. Fortunately, the gale moderated and the swell went down so rapidly, that the next day we were enabled to make fast and repair damages. We had a spare rudder, and after great difficulty, succeeded in shipping it, although only half so secure as it was before. We experienced no other damage of consequence; a great deal of copper was stripped off, though some of it was thrice the thickness of that generally used; also, everything that in the least protruded from the sides, was torn away. However, in a couple of days, we set all to rights, and were enabled to proceed; and to our great delight, on the 2nd of February, got into open water, having been upwards of six

weeks in the Pack; this was in lat. 68°. and long. 160°. W. Here we found the edge of the Pack trend to the westward. At this time, the season was far advanced, and as, in the preceding year, we had been obliged to commence our retreat on the 9th of February, so Captain Ross did not think proper to re-enter the Pack, but proceeded along the edge to the westward. We went as far as 187° W., and then to southward and eastward. On the 20th, we experienced a gale, but in open water; still, it was bad enough, not only because of the wind, but the spray coming over us was frozen ere reaching the deck, so that every thing soon became a mass of ice; coils of rope, and all, were covered several inches thick, and most of our running-gear about the bowsprit was carried away by the weight of ice formed on them.

At midnight, on the 21st of February, we came in sight of a berg, right ahead. After half an hour's beating at the frozen ropes, we managed to get the ship round, but the Erebus missed three times; however, we escaped without much damage, and again made for the south. On the 23rd, we came in sight of the grand Victoria Barrier, and as the day was fine, stood within a mile and a half of it, finally reaching 78°. 10′. S. lat., long. 162° W., having got six miles farther than we did the year before. Under all circumstances, this was more than we expected; for after being detained so long in the Pack, and the season closing so fast, we had little prospect of attaining so much; and although we had not discovered any land, all the magnetic and other observations are very satisfactory, and the position of the Pole more fully verified. Not being able to proceed to the eastward, we were compelled to begin our retreat, which we did, tracing the Pack edge.

On the 5th of March, we re-crossed the Antarctic circle, and saw but a few icebergs. On the night of the 12th, or rather morning of the 13th, for it was a little after midnight, the night being pitch dark and stormy, with a heavy sea, in lat. 60°., we were running east, wind scarcely aft, when suddenly we found ourselves close to a

chain of huge icebergs; and in hauling up to clear them (each ship doing so on opposite tacks), we came into unavoidable and, as it proved to be, exceedingly fortunate contact, striking most violently; our starboard bows met. This ship carried away jib-boom, cat-head, anchor, yard-arms, boom, and a boat. But the loss experienced by the "Erebus" was much greater; her bowsprit close off to the bows, fore-top-mast, cat-head, anchor, and a number of small spars gone. Nothing but their extraordinary strength prevented both ships being cut down to the water's edge; as it was, our consort smashed our strengthening pieces outside, while her bulwarks forward, were levelled with the deck. All the time we were foul, we continued helplessly drifting towards the icebergs, and thought ourselves inevitably lost; but on the ships clearing, we saw one part of the bergs darker than the rest, and happily it was an opening. Immediately after clearing the other ship, we were rushing close past an immense iceberg, and passed between two of these huge masses, through an opening not more than twice the breadth of our vessel, the foam caused by the sea against them, breaking over us on each side!

I have neither time nor inclination to dwell on the events of that dreadful night, which it even now makes me shudder to think of; but, some day, if it please God, through whose merciful interposition we were saved, I will give you an account when sitting over the fireside. I suppose no naval annals in the world could record such a narrow escape; however, we *did* escape, and what was more fortunate, without the loss, on this occasion, of a single life. The crippled state of the vessels prevented Captain Ross from performing all he had originally intended; which was, after reaching lat. 60°., long. 125°. W. (a spot calculated by Colonel Sabine as that of maximum intensity, but which surmise has proved to be incorrect), to have again proceeded south, if possible, as far as Cook's *ne plus ultra*, and then to this place. As it was, we made the best of our way, and with the exception of losing one man overboard, off Cape Horn, arrived here

(Berkeley Sound, Falkland Islands), in safety, without an individual on the sick list in either ship, on the 6th of April."

As might be supposed, the cruize above described could afford no opportunities for botanizing, but the time was improved by examining the New Zealand plants that had been collected. One curious fact, however, attracted the attention of the naturalist, namely the existence and vegetation of two species of *Algæ*, in the open sea and at an immense distance from land. Almost every previous voyager has noticed the famous *Sargasso weed*, though to this present day, it continues matter of dispute whether its enormous patches are propagated in the water, or at the bottom of the ocean. Very similar is the case with *Macrocystis pyrifera* and *Laminaria* (*radiata ?*), the two kinds of *Sea-weed* in question, which extend, in the southern regions, to the limits of the Antarctic circle; farther south, by two degrees, than any other vegetable production whatever. The former, *Macrocystis*, is the most abundant and was, at first, regarded as a good sign of the vicinity of land. It was, however, seen in all the latitudes which the Expedition traversed, from 35^0 to the immediate neighbourhood of ice, many hundreds of miles from any shore, in scattered masses, and these so large, fresh, and green, that it was impossible to conclude that either they had been recently torn from their native habitat, or that they were undergoing a slow death and a sure one. On several occasions, specimens were picked up, generally with great difficulty in those tempestuous latitudes, and they were found, on examination, to be, in every respect, similar to such plants as were gathered in the bays ashore; not only growing with the same vigour, but increasing; the ends of the branches being furnished with delicate, broad, young, green leaves, of all sizes, separating after the manner so correctly described in Harvey's *Cape Flora*. The enormous distance from any land, proved by the tracks of former voyagers and that of our Antarctic navigators, and the slowness of the currents near the places where these specimens were col-

lected, show that a very long time *must* and that ages *may* have elapsed since these floating portions left the parent plant. This *Weed* did not make its appearance close to the ice, still less in that open water which exists to the southward of the Packs. An accurate list was kept of the ships' position and dates of the time when it was found, and highly curious it was to note how uniformly the plant seemed to fail when the temperature of the water fell below 32° or 32°, in whatever latitude that might be, and how it appeared to avoid the icebergs; 63½° is the highest south latitude at which it was seen.

The currents that transport these weeds, are very slow indeed; probably *wind-currents*, which, with the *send* of the sea, must have wafted the original parent stock from the southern portions of New Zealand and the smaller islands appertaining to it, as far as Cape Horn. Its propagation in the water is apparently exceedingly tardy, and may possibly be effected by the agency of marine animals, which swarm about the patches of this and the *Laminaria*, their sole vegetable refuge in the higher latitudes. No roots whatever have been traced in such circumstances, nor do they seem essential to its life and increase. After separating out a single plant, perhaps thirty fathoms long, one end was invariably found green, and the other gradually more and more encrusted with *Flustræ*, *Serpulæ* and *Bicellariæ*, *Sponges*, &c.; till it terminated abruptly; the cellular substance of the stem being quite exposed, not covered with any more condensed parenchyme, but apparently bitten off; while here and there, along the stem, there were often pieces taken out, apparently by some molluscous animal.

One of the officers of H.M. schooner *Arrow*, a very intelligent individual, has stated it as his opinion, founded on the examination of many specimens, that as the *Macrocystis* grows large, it finally weighs up the stone which was its moorings, and then the whole plant goes off to sea, which, as he conceives, explains the reason for so much being found alive in the ocean.

The other *Sea-weed*, the *Laminaria*, was not found so common on "the high seas;" and when it did occur, was generally seen running out into long branches.

To mariners who had thus been the sport of winds and waves, tossed about among icebergs and in the Pack, exposed to great severity of cold in the midst of an Antarctic summer, even the stern scenery of the Falkland Islands, and in its winter dress, would have its charms and its comforts. There they came into the still and peaceful waters of Berkeley Sound, a long and deep inlet of the sea, at the head of which is the capital of the colony, and indeed, the only village in it, and where, happily, the arrival of a new Governor, Lieut. Moody, R.E., with a well-selected library, offered great attractions to the officers. The needful repairs were here made to the "Erebus" and "Terror," which were hauled ashore for that purpose, and an interesting statement of the occupation of the officers is given in the "Guernsey Star" newspaper, of Sept. 15th, 1842.

"Captain Ross and the Antarctic expedition are now here. The two ships came in contact when endeavouring to escape an iceberg in the seas of the South Pole; and they will stay with us positively five or six months, to repair the vessels, and to make observations. Capt. R. has erected an Observatory at the old French Fort, built by Bougainville. A most interesting series of observations is carrying on, which will be of great value to the scientific world; those on the pendulum are noted every quarter of an hour. Astronomical observations are also carefully taken by the officers. Thermometers are placed both above ground and under it; my own (it is the Governor who writes), along with my barometer, are doing duty with the rest, and have the honour to be registered also. The Anemometers, showing the direction and force of the winds, will add much to the valuable information afforded by Capt. Sullivan, R.N., respecting these islands; and the Pluviometers are also carefully noted. The present month (May) is equivalent to the Guernsey November. A

tide-guage is placed by the jetty. Also an excellent magnetic observatory, where the dip, intensity, and variation of the needle are carefully registered by these able and practiced observers; the officers relieving one another in regular succession during the performance of this duty. And never did I meet with such devotees to science. Captain Ross's little hammock swings close to his darling pendulum, a large hole in the thin partition allowing him to view it any moment; while Captain Crozier's hammock is just alongside. The floor of this room is mother earth, from our dearth of timber.

"At my request, the Captain has been so kind as to add to these observations another series, to ascertain the rate of evaporation in these islands; and Hooker, the botanist, has obligingly drawn up a report on the *Grasses;* our prevailing *Gramineæ* being considered as unknown in Europe.

"The splendid *Tussack Grass* is the gold and the glory of the Falklands, and it will yet, I hope, make the fortune of Orkney and the owners of Irish peat-bogs. Every animal here devours this grass with avidity, and fattens upon it, in a short time. It may be planted and cut, like the *Guinea grass* of the West Indies. The blades are about six feet long, and from two to three hundred shoots spring from one plant. I have proved, by several experiments, that a man can cut one hundred bundles in a day, and a horse will greedily eat five of these bundles in that time. Indeed, so fond of it are both horses and cows, that they will devour dry *Tussack* thatch from the roofs of the cottages, in preference to good grass. About 4 inches of the root tastes like the *Mountain Cabbage* (Palm). It loves a rank, wet, peat-bog, with the sea-spray dashing over it, and wherever the waves beat with the greatest vehemence, and the saline spray is carried farthest, there the *Tussack Grass* thrives the best, provided also it is on the soil it prefers. All the smaller islands, which help to form the Falkland group, and some of them are as large as Guernsey, are covered with it, and it is nutritious all the year round."

To the naturalists of the expedition, there are other charms in the animal, vegetable, and mineral productions of a group of islands, two of which are of considerable extent, one of them 130 miles long by 80 broad, and the other 100 miles by 50. Their position is interesting, too, as regards the proximity to the southern extremity of the great American continent, which, it is very clear, has materially influenced, as might be expected, their vegetation. Situated between lat. $52\frac{1}{2}^0$. and 54^0. south, and 57^0. 20′, and 61^0. 46′ west long., the Falklands lie about 1,000 miles S.S.W. from the estuary of Rio de la Plata, and 240 miles N.E. from Terra del Fuego. It is true that several botanists had already visited East Falkland, the only island in the group that could be investigated on the present occasion, and I believe the only one that has been at all explored. Pernetty appears to have been the first person to collect the plants of the Falklands. He accompanied Bougainville, when the latter attempted to colonize the islands, and described many of the vegetable productions. In 1825, an interesting memoir was presented to the *Academy of Science* at Paris, by M. Gaudichaud, entitled "*Flore des Iles Malouines.*" This was the fruit of that disastrous shipwreck of the French frigate *L'Uranie,* on the Falklands, by which the officers and crew were compelled to remain there during a period of three months. M. Gaudichaud had an arduous task in rescuing from the stranded ship, an herbarium formed during the voyage, of 2,500 species, which had been immersed in water in the hold, till the paper was reduced to a pasty mass, from which the specimens had to be extracted, sheet by sheet. It was an agreeable relief from this irksome and disheartening occupation to gather the products of these little-known islands. The Flora above alluded to, enumerated one hundred and twenty-eight species, including *Cryptogamiæ,* of which from forty-two to forty-six were considered new.

"The superficies of this group of islands," says M. Gaudichaud, "may be roughly calculated at about two hundred to

two hundred and twenty square leagues. Part of the coast is bordered with rocks and denes, exhibiting towards the interior some mountains of moderate elevation, and plains covered with lakes and marshes. During the winter, which is long and very severe, snow falls to a depth of many feet. The surface-soil is composed of a spongy turf which begins where the coast-sand ends, and stretches uninterruptedly over the mountains and the level lands. This soil is most unfriendly to cultivation, and French, Spanish, and English colonists have successively given up the attempt in despair, and forsaken these islands. Still there are plants which affect peaty lands, and grow here abundantly. Not a tree is to be seen, the only approach to it being a shrub, the *Veronica decussata*,* which attains a height of 6 feet, but is extremely rare; it was originally detected by Commerson, in the Straits of Magelhaens, and named, in his MSS., *Hebe Magellanica*. The aspect and foliage resemble the myrtle.† Among the larger plants of the Falklands are *Chiliotrichum amelloides*, a syngenesious shrub, about 3 feet high; the *Festuca flabellata* (or *Tussack Grass* mentioned above), whose fine fan-shaped leaves are nearly 6 feet long, and which entirely covers the islets; and finally, *Pernettia empetrifolia* and *Empetrum rubrum*, under-shrubs of moderate stature, already found by Commerson in the district of Magelhaens. The other plants seem as if they all had been levelled low, so rarely does one species rise, in the least, above the rest. They generally form compact, close, grassy tufts, very unpromising for the botanist. The prevailing tribes are *Lichens*, *Ferns*, *Mosses*, *Cyperaceæ*, *Gramineæ*, *Compositæ* and *Ranunculaceæ*. The *Algæ* can hardly be considered as belonging to these islands, though they abound in the bays; they are marine produc-

* This shrub is confined to West Falkland.

† In Jersey, where this shrub is not uncommon in gardens and grows about three or four feet high, it is called *Box-Myrtle*.

tions, and have no affinity with the growth of the soil. It is very singular, that neither *Leguminosæ*, *Labiatæ*, *Borragineæ*, or *Chenopodeæ*, groups which prevail in almost every part of the world, exist in the Falklands. Seven species of *Gramineæ*, together with three *Cyperaceæ*, and four *Junci*, are found in such profusion, and form such dense tufts, as to engross nearly all the soil, to the great exclusion of other plants. When this thick grassy turf is separated, a prodigious quantity of *Lichens*, *Mosses*, *Lycopodia*, *Marchantiæ* and some other *Cryptogamiæ*, with several *phænogamous* species, may be seen beneath it, mingled with small suffrutescent plants, whose stems are weak and creeping.

"When the periodical return of winter puts a close to this annual vegetation, the water which remains in the soil as in a sponge, preserves from entire decomposition those numerous plants which die, and their woody portions form a mass, which yearly adds to the amount of peat-bog. We may be allowed to conjecture that in these islands, as is the case in other parts of the world, the vegetable remains, by their gradual and imperceptible accumulation, will finally fill up the lakes."

In the following year, namely 1826, a very similar memoir appeared in the 4th volume of the *Mémoires de la Société Linnéenne*, under the same title, *Flores des Iles Malouines*, and drawn up by the still more unfortunate M. J. Dumont d'Urville. This accomplished traveller and naturalist, as is well known, had but recently returned from a second adventurous voyage in the Antarctic regions, having escaped all the dangers attendant upon such hazardous undertakings; but, on a little excursion of pleasure in the environs of Paris, he and his whole family fell victims to that most awful accident on the railroad of Versailles, in May, 1842. In the voyage, when the materials for his *Flore des Malouines* were collected, M. d'Urville commanded the "*Coquille*," and on the 18th of November, 1822, cast anchor in the immense Bay of *La Soledad*. "What a descent," he says, "does the

botanist make, who from the shores of Brazil, is suddenly transported to the flats of the Malouines! To those immense forests, countless shrubs, and impenetrable thickets, which had perpetually arrested his steps and gaze, succeed bare hillocks, and boundless plains, not a tree, or even a real shrub, breaks the uniformity of these vast solitudes. The traveller, assailed by wind, rain, and hail, has often to traverse many miles before reaching the slightest shelter; for the earth itself, as uniform as its vegetation, presents no jutting rock among its valleys, nor any of the hollows which are so common in wild and uncultivated regions. Notwithstanding, however, this extraordinary nakedness, there is no country where the soil is so thickly clad with a dense, though low, covering; for almost all the indigenous herbaceous plants and little shrubs, are provided with creeping roots and off-sets that strike into the ground, by which they are firmly fastened to the soil, and woven one among another,—a wonderful provision of nature, doubtless intended to protect vegetation from the destructive power of those tempestuous winds so prevalent in these latitudes.

"A stay of twenty-six days, and twelve botanizing excursions, afforded one hundred and eight distinct species of flowering plants; and I shall hardly suppose that more than a quarter part of the productions of the island can have escaped my notice, or that more than one hundred and forty species, or thereabouts, can exist on the Island of Soledad; for my researches were very diligently pursued. The circumstance, too, that M. Gaudichaud, a skilful and close observer, only found, during his stay of nearly three months, eleven plants which I had not gathered, confirms this opinion; and out of these eleven, the *Azolla* and *Rumex acetosa* are only cited by him from memory, while the *Veronica decussata* was given him from the other island, thus reducing the difference between us to eight. On the whole, therefore, the Flora of these islands may be said to be richer than a first glance would lead one to suppose.

"In spite, too, of the hundred degrees of latitude which sever this island from Europe, there are many points in which their botanical productions resemble each other, as numerous examples will prove.

"The gigantic Grass (*Festuca flabellata*, commonly called *Tussack*) which covers three-fourths of the Isle of Penguins and all the sandy dunes of the Bay of La Soledad, and whose enormous tufts look, at a distance, like a thick-set copsewood, has much affinity with our *Dactylis*. On the same dunes grow *Apium graveolens*, *Statice cæspitosa*, *Triticum junceum* (?) and *Lolium perenne*. The *Arundo pilosa*, *Avena redolens*, *Aira flexuosa* and *Festuca erecta* constitute, of themselves, an excellent pasturage of great fertility, and cover an extent of many miles. On first observing *Cerastium vulgatum*, *Alsine media*, *Sagina procumbens*, *Senecio vulgaris*, *Veronica serpyllifolia*, and *Rumex Acetosella*, I inclined to the opinion that they were imported by man; but, afterwards, the great profusion and distance from cultivated spots at which they grow, made me consider them indigenous; for it is hard to believe that winds or birds can have transported the seeds; and these European plants were, moreover, almost all seen by Commerson about the Straits of Magelhaens, nearly fifty years ago, with the addition of *Cardamine hirsuta*, *Thlaspi Bursa pastoris*, and *Primula farinosa*.

"Many of the most prevalent European genera are represented in these islands by species which strongly resemble those of the Old World; and of the eighty genera of plants which constitute the Flora, there are only between fifteen and twenty which are not common to the European continent. These are *Oreobolus*, *Gaimarda*, *Astelia*, *Callixene*, *Sisyrinchium*, *Drapetes*, *Nanodea*, *Calceolaria*, *Nassauvia*, *Baccharis*, *Perdicium*, *Oligosporus*, *Chiliotrichum*, *Nerteria*, *Azorella* and *Misandra*. In a word, the affinity is so considerable that I should almost think a botanist would feel himself more strange if transported suddenly from Morbihan to the shores of the Var, than if set down on the Malouine Islands.

Nature, so fertile and varied under the Equator, becomes more uniform in northern regions, and having apparently lavished all her types on the vegetation of the tropics, is reduced, so to speak, to assign similar genera to the most widely-severed portions of our globe.

" The majority of plants, inhabiting the Malouines, have been found also by Commerson, near the Straits of Magelhaens, and by Forster on Tierra del Fuego; thus leading to the supposition that these islands once formed a portion of the great South American continent. The soil is everywhere turfy below, and so spongy as to imbibe moisture with great rapidity and leave the grassy surface dry. This turf is much thicker in the interior than near the sea-shore, and has frequently such abrupt perpendicular edges as resemble the work of man. These natural ramparts are not uncommon on the high grounds, often rising to an elevation of 4 or 5 feet above the surrounding land, and their formation is a subject of difficult explanation. They afford a most desirable shelter from the winds to the numerous herds of wild horses. Streams of fresh and pure water everywhere intersect the islands; and though they are marshy at the brink, the close and firm nature of the vegetation prevents the earth from being seen, or the feet of the traveller from sinking. There are fine lakes in the plains, and basons of water on the very summit of the mountains. Water is everywhere abundant; but most of the plants are of a resinous nature, or furnished with a varnished surface, which protects them from the effects of so much wet. The dry nature of the plants was shown by the facility with which I preserved my specimens, notwithstanding the cold weather and the rains which never ceased to fall during the whole time of our anchorage at the Islands, between the 18th of Nov. and the 18th of Dec., corresponding with May and June of our hemisphere.

" This residence was long enough to show how fearful are the winds in these islands, and how admirably fitted the vegetable productions of the soil are to resist their violence.

All those plants whose stems rise a little above ground, are flexible, and bow beneath the blast, while the chief part are of lilliputian growth, and form such dense and interwoven masses, that the very soil must flee away in dust, ere they could quit their position. Nothing can be more singular than the enormous tufts of *Bolax*, which at first are no bigger than molehills; but, by the constant addition of new shoots, swell in all directions, and attain a height and breadth of some feet. A resinous and strong-smelling substance continually exudes from all parts of these plants, and is perceptible at a considerable distance. If carefully examined and analyzed, it is probable this gum might be found to possess some valuable properties."

M. d'Urville visited Mount Châtellux, 17 miles distant in a straight line from his ship. "Two days were devoted to this excursion, in each of which we walked for fifteen hours; and this long walk gave us a good opportunity of examining the nature of the island, the result of which was that the farther you proceed inland, the less varied is the vegetation. Once past the dunes, marshes and rocks, which have each some peculiar plants, and the country stretches for miles in uniform plains, solely producing the three Grasses mentioned above, and a few thinly scattered tufts of the *Bolax*. When the ground rises again, the variety becomes greater, and on the summit of Mount Châtellux, I found almost all the species that had been seen in the lower situations, though reduced to half or a third of their usual dimensions; except, indeed, the *Bolax*, which grew as strong as elsewhere, though springing out of the entirely naked rock. Five plants alone appeared peculiar to these elevated spots; a beautiful *Aspidium* (*A. mohrioides*); the curious *Nassauvia serpens; Cenomyce vermicularis*, white as snow; and two minute plants which grow in the closest tufts, *Drapetes muscoides*, originally found by Commerson in the Straits of Magelhaens, and a new *Valeriana*, which I named *sedifolia*. The beautiful *Lomaria Magellanica* is rare on the plains, but abounds among

the courses of quartz stones that may be seen on the mountain sides; while *Usnea melaxantha* carpets the surface of these huge blocks, with its fronds varied of yellow, fawn and black."

M. d'Urville increases the number of Falkland Island species to two hundred and seventeen, of which ninety-seven belong to *Cryptogamia.*

In 1841, Mr. Wright returned from a mercantile voyage to the Falkland Islands, where he very laudably employed his leisure time, during the summer months, in making a beautiful collection, which was presented to me;* among them are some species that had not been previously found on the Islands; and still more recently, a few specimens, gathered there by Lieut. Robinson, and communicated to me by the Admiralty, afforded a *Hamadryas,* a very fine *Draba* and a *Gleichenia,* which appear to have been overlooked by all former collectors.

After these and other researches, it is hardly to be expected that much was left for the botanists of the "*Erebus* and *Terror*" to discover; especially, seeing that their stay was almost wholly in the winter months. Yet, notwithstanding these disadvantages, the number of species of flowering plants, when the last intelligence came away, on the return of the expedition from Cape Horn, amounted to one hundred and seven, gathered by one individual. Of *Cryptogamia,* as may be supposed, there is a much greater proportion, and many of them are extremely beautiful; and copious notes and drawings were made of both, which cannot fail to be of great value.

The "*Erebus* and *Terror*" came to anchor in Berkeley Sound, on the 5th of April, 1842, the commencement of winter. The purser went ashore and returned after nightfall, but was entreated to bring on board a specimen of some vegetable production of the country. He grappled in the dark, and

* Several of the plants have been published in the 6th vol. of the *Icones Plantarum Rariorum.*

obtained a plant of *Shepherd's Purse!* "But," said the disappointed botanist who had made the request, "I hope for better things to-morrow." A letter, dated Berkeley Sound, East Falkland, August 28th, 1842, proceeds thus:

"Our stay in this Island has afforded me time for investigating its botany as fully as the wintry season and stormy weather will permit, and I would fain hope that little has escaped my notice. Some of my specimens are imperfect, owing to the time of year; and I have only gathered such because they may yet be determined at home; or if not, they may add one or two to certain *Natural Orders*, whose geographical distribution is a subject of much interest to me. Among the *Lichens* I have had a fine field here; some of them, especially the rupincolous species, are particularly handsome.

"The collection ready for sending home, contains numerous specimens of every tribe of plants found in the Falklands, with the exception of the *Algæ*, which here attain gigantic dimensions. My notes are rather copious, both on the plants themselves, and their distribution in the various parts of the Island. All the plants enumerated by Gaudichaud as having been found by himself and others, have come under my notice, except three or four.

"*Mosses* are now, and only now, showing fructification; many of the species I have only found in a barren state, especially among the *Pleurocarpi*.

"There are of *Andræa*, two sp. Of *Sphagnum*, one (or what might be called three). *Grimmia*, two, in fr. *Trichostomum*, our hoary friend (*T. canescens*), barren and very scarce. One *Orthotrichum*, resembling the Kerguelen's Island maritime species. *Didymodon*, two or three. *Dicranum*, two. *Campylopus*, one. *Tortula*, two. Three *Brya*, in fruit. *Funaria*. *Bartramia*, two, in fruit. *Polytrichum*, two, barren. Several *Hypna*, and two *Hookeriæ*, all barren. About ten species of *Jungermannia*, two *Marchantiæ*, and a *Riccia*. There are about thirty species of *Lichen*, and among these, *Usnea melaxantha*, which is quite different from the yellow Kerguelen's

Island *Usnea*, being larger and more handsome; also some beautiful species of *Sticta* and *Roccella*, and several *Cladoniæ*.

"My *Sea-weeds* are not examined, and I shall send none of them home till I have done so. There are three species of *Macrocystis*, and several *Laminariæ*, here taking the place of the *Sargassa* of milder climates, some lovely *Floridieæ* and the *Ballia*, one of the commonest sea-weeds here, and attaining a large size. I do not doubt its being the *Sphacelaria callitricha* of Agardh.

"*Marine Confervoid* species are abundant, many of the bays being covered with an odious-looking green slime, formed by one or two kinds. There are also several fresh-water species.

"*Fungi* are scarce. On our first arrival, two large *Agarics* and a yellow *Helvella* (?) were common, but I neglected to gather them, and when the cold weather set in, they immediately vanished. I have, however, requested my friend, M. Lyall, of the '*Terror*,' to collect them when the spring begins, at which time we shall be absent at Cape Horn, and I have provided him with a bottle of spirits for the purpose. The other *Fungi* are two small *Agarics*, a *Lycoperdon* and a *Peziza*.

"Of *Ferns* I possess two *Lycopodia*, two *Steganiæ*, the *Hymenophyllum cæspitosum* (the smallest *fern* I ever saw), a handsome new *Aspidium*, very rare, and gathered last week in the stream of stones described by Darwin, and a *Gleichenia*, kindly given me by the Assist.-Surgeon of H.M.S. 'Arrow,' but which I have never seen alive.

"Since beginning this letter, I have taken a long walk to visit *Uranie Bay*, where the French navigator, Freycinet, lost his ship, 'L'Uranie.' Leaving our anchorage, I proceeded to the south end of the upper extremity of this harbour, along a slaty beach, overhung with low cliffs of clay-slate, covered with *Gunnera*, *Acæna*, *Oxalis enneaphylla*, *Cardamine glacialis*, *Nassauvia Gaudichaudii*, *Homoianthus echinulatus*, with here and there bushes of *Empetrum rubrum* and *Chiliotrichum amelloides*, and many smaller plants, some of them mari-

time, as a fine *Statice*, a little *Psyllium*, and four or five curious forms of *Umbelliferæ*, as the *Bolax*, which forms large overhanging semi-circular mounds, and the little *Azorella lycopodioides* and *filamentosa*, a new *Caldasia* and a most singular *Hydrocotyle* (*?*) with fistular simple linear leaves. The shore is covered with entangled masses of two species of *Macrocystis* and other *Sea-weeds*. A *Sticta*, one of the most beautiful of *Lichens*, forms large leafy patches among the *Grasses*, of several sorts, while the barren rocks are covered with *L. geographicus*, a noble *Roccella*, sometimes nearly a foot long, and other fine *Lichens*, which completely whiten them where they are most exposed to the light.

"The holes and crevices are full of *Mosses* and *Jungermanniæ*, a *Riccia*, two *Hookeriæ*, two *Bartramiæ* and others. It has been the first fine day we have enjoyed for a long while, and the plants are just beginning to sprout. *Viola Magellanica* and the *Oxalis* are showing their leaves, and the tufts of grass look green at the base, especially the fine *Hierochloe* (?), of which the old leaves, drying in the sun, smell delightfully. The poor *Birds*, whose breeding-season has commenced, are revelling in the change of weather. The *Steamer-Ducks* flock along the water, so tame that any one may come within a yard, as they are pluming themselves and uttering their wheezing clack-clack, presenting a curious contrast to the restless shy *Black-backed Gull*, which watches them from over-head, and whenever the poor *Duck*, after a dive, emerges with a fine sea-animal in his bill, this pirate *Gull* darts down and seizes the morsel, before the original captor has had time to draw his breath. Little *Sandpipers* are running and chattering along, and every here and there, the beautiful *Kelp Goose*, with her spotless white *Gander*, appears sitting on a rock, and picking choice specimens of *Algæ*. A smaller *Gull*, with black head and beautiful rose-coloured breast, has the habits of a *Tern*, perpetually screaming and suddenly dropping, with wings erect, on the water, with a little splash, to pick up some incautious shrimp.

"Leaving the beach, the upland grounds are low and flat, intersected by small valleys and slow streams, running deep in the boggy earth; the *Arundo Alopecurus*, forming an excellent pasturage for cattle, covers all the bogs, and the *Bolax* grows in large hassocks on the drier tracts. Here one has constant companions in the *Caracara Hawks* (*Polyborus*), which follow the stranger everywhere, perching close by, upon the ground, frightening the poor rabbits out of their forms, and narrowly watching every motion. Nothing grows so high as the grass, though now and then tufts occur of the *Empetrum* and a little *Arbutus*, accompanied by *Corniculariæ*, *Cenomyces* with red *pyxidia*, and *Cetrariæ*.

"The valleys, again, are full of bushes of *Chiliotrichum*, *Trichostomum lanuginosum*, *Sphagnum*, and a few other *Mosses*. Presently a *Snipe* gets up, or a flock of *Thrushes*, or the beautiful red-breasted *Starling* (?) twittering and chattering from bush to bush. The *Upland Geese* are pairing, and geese though they be, an experience of five months, during our stay here, has taught them to fly away, instead of sitting still to be shot at. The long creeks, which run up from the Bay, have their banks covered with slimy confervoid *Algæ*, and here the little *Teal* swim and whistle in flocks; while the *Black and White Oyster-catchers* keep poking their long red bills into the ooze; and busiest of all, the beautiful *Chionis* stands, scarcely heeding you, while the low water affords him a feeding-time.

"The hills are all quartz; and, wherever that formation presents itself, it may be recognised by the turf containing patches of the *Astelia*, *Caltha appendiculata*, *Oreobolus obtusangulus*, *Gaimarda australis* and *Myrtus Nummularia*. The fine *Stegania* grows only near quartz-rocks, which, though so dry and hard, are rendered perfectly beautiful by the *Usnea melaxantha*, forming a mimic forest, accompanied by other foliaceous and crustaceous *Lichens*. 'Uranie Bay' is of sand, with sand-hills at the back, like the Denes of Yarmouth, in Norfolk; among these grows a fine *Grass*, with

two beautiful *Senecios*, and large patches of a *Tortula*, like *ruralis*. It was among these hills that Freycinet encamped his crew, and a sketch, which I have copied from one that was done at the time by an English sailor of the party, and which belongs to the Governor here, represents the scene. In Weddell's Voyage you will find some particulars of this disaster. The sand is of the purest snowy white, against which the sea appears of a brilliant blue. Large beds of *Kelp* cover the rocks outside, and have now hidden the wreck of the '*Uranie*,' of which no sign appears, but some copper and a few iron watercasks on the beach.

"At the back of the sand-hills are several pools of water, in which I gathered Gaudichaud's *Limosella* and *Myriophyllum*; but though I have been hunting ever since I came here for the *Azolla*, in similar situations, not a trace of it has met my eyes. On the beach lie huge trunks of *Sea-weeds*, perhaps the *D'Urvillea*, branched like a tree; sometimes a foot in diameter, and often 12-14 feet long. A horizontal section of the stem presents oval concentric rings, answering to successive periods of its growth. These rings are composed of cells, containing a viscid fluid, which evaporates as the trunks dry up, till these, shrinking excessively, become harder than horn. It is singular that the *Usnea*, perhaps the largest form among *Lichens*, presents a still more striking analogy to *exogenous vegetation*; so remarkable that I think it must be noticed somewhere. A horizonal section of any of its stems or larger branches, exhibits a distinct cortical layer, of a yellow colour, and coriaceous consistency, loosely attached to an inner corky layer, which sends medullary rays through a hard red horny axis, to meet a central corky pith. Except that these layers are all separate forms of cellular tissue, they are, in every respect, analogous to the *Bark*, *Wood*, and *Pith* of a tree. I think that the red horny tissue expands over the *excipulus* of the thallus, and gives off the *peridia*."

The most interesting and useful vegetable production of the Falklands is undoubtedly the *Tussack Grass*; a name evi-

dently given to it, from the immense tufts or *tussacks* formed by the plant; nor, indeed, is the appellation wholly restricted to this valuable esculent grass, but it is also applied to a species of *Carex* (*C. trifida* of Cavanilles), which grows in a similar manner; a circumstance which gave rise to an important error: for specimens of the *Tussack Sedge* were put into the hands of the Botanist, that a description might be forwarded to the Colonial Office, and accordingly a description of the *Sedge*, which, indeed, in its young state, is eaten by the cattle, was transmitted instead of the grass. The error was quickly detected, and, at the Governor's request, a full account, with a drawing and corresponding specimens, were received at the Colonial Office, and these have been obligingly placed in my hands, that they may be added to this brief notice of the botanical results of the expedition. A correct acquaintance with this *Grass* is the more important, because, as is well known, the great value of the Falklands to Britain arises from the vast numbers of cattle, (sprung from the original stock left many years ago by the Spaniards) which feed and fatten there, and with which, vessels touching at those islands can be readily supplied. Also, because the nature of the soil and climate producing this grass gives every reason to believe that the shores of a vast extent of England, Scotland and Ireland, would suit it equally well; more especially the Western coasts of the two latter countries. Indeed, public curiosity has already been strongly excited at home upon this topic by the mere newspaper reports, to a degree which is perhaps only known to the writer of this article, who, from the deep interest he naturally feels in all that concerns the Natural History results of this expedition, and from his connexion with the Royal Botanic Gardens at Kew, has been overwhelmed with applications for seeds and plants of *Tussack Grass*, from the proprietors of unprofitable sandy and peaty soils throughout the British Dominions. To all, his answer has been, that, as yet, no living plants or seeds have reached

Europe, which is, unfortunately, the fact. Already, too, from the best sources, a very excellent account, with a plate representing the tufts of this grass, has appeared in the *Gardener's Chronicle* for March 4, 1843; a work so deservedly encouraged, that, through its medium, the *Tussack Grass* is, by name and general aspect, rendered familiar to almost every one.

Pernetty, who, as above stated, accompanied Bougainville in the French ship, *La Boudeuse*, in 1766, would seem not to have fallen in with the finer tufts of this grass; if indeed it be not the *Carex trifida* of which he says, "We were half a league distant from two flat islands, which, at first view, appeared as if covered with small copse-wood; but, as we afterwards discovered on landing, it was but tall Bullrushes or Cornflags; they grow, each of them, about $2\frac{1}{2}$ feet high, and afterwards shoot out a tuft of green leaves, to nearly as much height more."

Bougainville's own notice of the plant is far more correct: "All the sea-coast and islands are covered with a plant, which has been erroneously termed a Cornflag; it is, however, a species of grass, of the most beautiful green colour, and growing to a height of 6 feet. It forms a hiding place for the sea-lions and sea-wolves, and served as a shelter to ourselves during our wanderings. A house may be formed of it in a very short space of time; the inclined stems, when fastened together, serving as a roof, while the dried straw makes a tolerably good bed. With this plant we also thatched our dwellings. The root is sweet and nutritious and preferred by beasts to any other food."

The Botanist, M. Gaudichaud, who accompanied Freycinet in his Voyage round the World, after enumerating the remarkable plants of the Falkland Islands, thus speaks of the *Tussack Grass*. "Finally, there is one production of still higher interest, because it furnishes abundance of nourishing food all the year round, and this is the great Grass, *Festuca flabellata*, which covers two thirds of the Isle of Penguins,

and the other islets in the French Bay, and moreover, according to the statement of M. Orne, may be seen in equal profusion on the shores of all the Falklands. The plant grows from 4 to 6 feet high, its leaves are sheathing and compressed. The inner portion of the stem, to the height of 5 or 6 inches above the root, is white and soft, crisp, agreeably flavoured, somewhat resembling Filberds, and very wholesome. This substance consists of the inmost sheathing bases of the central leaves and stalks closely compressed, and encased within each other. The taste is perhaps most like that of the highly esteemed *Mountain Cabbage Palm.*"

Mr. Wright brought home a similar account of the *Tussack Grass*, and assured us that its young shoots are boiled and eaten like asparagus. He also showed us specimens and a drawing of the tufts of this Grass, as they appear in the small islets. From this drawing the woodcut was made for the *Gardener's Chronicle*, and the editor of that work has had the kindness to place the block in our hands, to be used on the present occasion. By far, however, the most interesting account of the *Tussack Grass* is that given in the Report abovementioned, which was sent by the Governor, Lieut. R. C. Moody, R. E., to the Colonial Office.

"During several long rides," he says, "into the country, I have always found the *Tussack* flourishing most vigorously in spots exposed to the sea,* and on soil unfit for any other plant, viz. the rankest peat-bog, black or red. It is singular to observe the beaten footpaths of the wild cattle and horses, marked like a foot-track across fields in England; extending for miles over barren moor-land,† and always terminating in some point or peninsula, covered with this favourite fodder; amid which one is almost certain to meet with solitary old bulls, or perhaps a herd of cattle; very likely a troop of wild

* "The wild west coast of Ireland would exactly suit this grass."

† "The poor soil, above described, covers about one fourth of the surface of the country and is the worst of all, as to herbage."

horses, just trotting off as they scent the coming stranger from afar. To cultivate the *Tussack Grass*, I should recommend that its seed be sown in patches, just below the surface of the earth, and at distances of about 2 feet apart; it must afterwards be weeded out, for it grows very luxuriantly, frequently attaining a height of 6 or 7 feet. It should not be grazed, but cut and reaped in bundles. If cut, it quickly shoots up again, but is much injured by grazing; for all animals, especially pigs, tear it up to get at the sweet nutty-flavoured roots. I have not tried how it would be relished if made into hay, but cattle will eat the dry thatch off the roof of a house in winter; their preference to *Tussack Grass* being so great that they scent it a considerable distance, and use every effort to get at it. Some bundles, which had been stacked in the yard at the back of Government House, were quickly detected, and the cattle from the village made, every night, repeated attempts to reach them, which occasioned great trouble to the sentry upon duty."

The same Report contains also Dr. Hooker's description of the *Tussack*, which I here transcribe, and to which I have likewise added a figure and analysis, also sent home by the same Botanist. Dr. Hooker speaks of it under the name of *Festuca flabellata*, and it is certainly the plant so called by Lamarck, (who described it from Commerson's specimens, gathered by the latter Voyager in the Straits of Magelhaens,) and of the French Naturalists; but he correctly refers it to the genus *Dactylis*, and suggests that it may probably be the *Dactylis cæspitosa* of Forster. A comparison with the original plants, though very indifferent specimens, deposited by Forster in the Banksian Herbarium, prove that Dr. Hooker is quite right in this idea. Forster found the plant growing on New Year's Island, near Staten Land, and says of it that the *Magelhaenic Shag*, (*Pelicanus Magelhaenicus*,) commonly builds its nest upon the top of the great tufted bases of this plant, which are often two feet high.

Dactylis cæspitosa.

Panicula spiciformi densa interrupta valde compressa, locustis brevissime pedicellatis late ovatis 4-floris, glumis subæqualibus, palea inferiore puberula apice bifida breviter aristata, culmis validis compressis foliisque longissimis d is tichis glaberrimis.

Dactylis cæspitosa. *Forster in Comment. Goett.* 9. *p.* 22. *Willd. Sp. Pl. v.* 1. *p.* 407.

Festuca cæspitosa. *Rœm. and Schult. Syst. Veget. v.* 2. *p.* 732. *Kunth, Agrostogr. p.* 408.

Festuca flabellata. *Lam. Encycl. Bot. t.* 2. *p.* 462. *Gaud. in Ann. des Sc. Nat. v.* 5. *p.* 100., *and in Freyc. Voy. Bot. p.* 409. *D'Urv. in Mém. Soc. Linn. v.* 5. *p.* 603., *and in Duperrey Voy. Bot. p.* 36.

Hab. New Year's Island, Staten Land, *Forster.* Straits of Magelhaens, *Commerson.* Hermite Island, Cape Horn, *J. D. Hooker.* Falkland Islands, in the neighbourhood of the sea, on peaty, rocky and sandy soil, very abundant:—not seen inland.

This remarkable *Grass* is perennial, and forms, with its densely matted roots, crowded but isolated hillocks, or tumuli, 3-6 feet in height, and 3 or 4 feet in diameter, from which the leaves and stems spring. *Roots* fibrous, the fibres very tortuose. *Stems*, or *culms*, numerous, rising from the hillocks, erect, branched or divided only at the base, 3-4 feet long, smooth, compressed, leafy, pale yellow, abounding in saccharine matter, and when young, esculent, even for man. *Leaves*, the lower ones very long, not unfrequently 5 to 7 feet, exceeding the length of the stem, 1 inch broad at the base, and gradually tapering to an acuminated point, the upper side is channelled from the involute margins, from above the middle they are curved downwards, or are even pendent; the stem-leaves are gradually shorter upwards, erect, the sides involute, their colour a pale glaucous green. The *sheaths* are, like the stem, compressed, smooth, striated, cleft at the top; the *ligule* very thin and membranaceous, rounded,

or a little longer than broad. *Panicle* a span or more long, dense, so much so as to form a slightly interrupted (not continuous) *spike*, 1½-2 inches broad, compressed, obtuse;—the branches short, erect; the rachis angled. *Spikelet* (or *Locusta*) composed of 3-4 florets, of a pale yellow-green colour. The *calycine glumes* are lanceolate, acuminate, longer than the spike of flowers, slightly keeled, shortly ciliated on the back, 3½ lines long, the margins a little involute, and as well as the apex, membranous and transparent, the superior one a little longer than the other, 3-nerved, the nerves ciliated. The *lower glume* or *palea* of the corolla is ovate, concave, compressed, sharply keeled, bluntly trifid at the apex, with the middle one of the three teeth the longest and somewhat incurved and awl-shaped, 5-nerved: the lateral nerves above evanescent, the margins scariose, the keel and nerves ciliated; the upper one much shorter than the lower, and with a double keel, 2-nerved, emarginate at the apex, except the nerves, which are ciliated and green. *Hypogynous scales* 2, broadly obovate, obliquely 2-lobed, the lobes ovate, acute, their margins laciniated, they are membranous, transparent, and only a little shorter than the ovary. *Stamens* 3. *Anthers* pale yellow. *Ovary* nearly ovate, glabrous. *Styles* elongated, approximate at the base. *Stigmas* plumose, lax. *Caryopsis*, or *fruit*, elongato-ovate, or almost cylindrical, slightly trigonous, of a pale yellow colour, and smooth."

References to the plate, and analysis of *Dactylis cæspitosa*. Fig. 1. spikelet of flowers, *f.* 2. single flower, *f.* 3. Stamens, pistil and hypogynous scales, *f.* 4. one of the hypogynous scales, *f.* 5. pollen-granules:—more or less magnified.

The opinion of the writer of the foregoing description is, that with proper attention to its propagation and locality near the coast, and preservation from being entirely eaten down where it already abounds, the *Tussack Grass* would, alone, yield abundant pasturage to as many cattle as there is ever likely to be a demand for on the Falklands.

The same writer proceeds to inform us that the immense

abundance and luxuriant growth of this Grass, render it quite a striking feature in the landscape. The roots form great balls, which even rise 5 or 6 feet above the ground, and the long leaves, springing from the culms, hang down all round in the most graceful manner. The heaps or "tussacks" grow generally apart, but within a few feet of each other, the intermediate space of ground being quite bare of vegetation, so that in walking among them, you are perfectly hidden from view, and the whole *Tussack ground* forms a complete labyrinth. *(See the adjoining Wood-Cut).*

The experiment of cultivating this valuable Grass promised to answer well in the Falklands; where, in the Governor's garden, it was coming up strongly from seed, drilled in rows, like Turneps. It must, however, be taken into consideration, that for *Tussack* to thrive in this country, the plant must so far change its habits of the Southern Hemisphere, as to forget that our winter is its summer, and vice-versâ.

D'Urville says that the Penguins build their nests and hatch their young beneath the shady tufts of this grass.

The same despatch to the Colonial Office, in which the above description is given, contains also a letter from the botanist of the Antarctic Expedition to the governor, in which another grass, among the many valuable *Gramineæ* which the Falklands produce, is particularly noticed. This is of scarcely inferior importance to the *Tussack*, and being much more universally diffused over the islands, it must be far less particular as to soil and situation. It is a kind of *Fescue-Grass*, the *Festuca Alopecurus* of D'Urville (*Arundo Alopecurus*, Gaudichaud). In the Report presented to Govr. Moody by the botanist, and transmitted to Lord Stanley, it is stated: "Another grass, however, of far more extensive distribution than the *Tussack*, scarcely yields to it in nutritious qualities. It covers every peat-bog with a dense and rich clothing of green in summer, and a pale yellow, good hay during the winter season. This hay, though formed by nature without the operation of mowing and drying, keeps those cattle which have not access to the *Tussack* in excellent condition,

Tussack Grass of the Falkland Islands, from the original drawing in the possession of Sir W. J Hooker.

as was proved by the beef with which our hunting parties supplied, for four months, the Discovery Ships. No bog, however rank, seems too bad for this plant to luxuriate upon, and as was observed during a surveying excursion which had been made to Port William, although the soil on the Quartz districts was very unprolific in many good grasses which flourish on the clay-slate, and was, generally speaking, of the worst description, still this *Fescue-Grass* did not appear to be affected by the difference, nor did the cattle fail to eat down large tracts of such pasturage.

"The numerous troops of horses, too on the flanks of the Wickham heights, can procure little other fodder; while those of Mount Lowe and Mount Vernet must depend upon it entirely. Should the *Tussack* disappear from any part of the Falklands where stall-fed cattle are kept, it might be advisable to treat this *Fescue Grass,* as hay in England; by which process its nutritious qualities would, doubtless, be much better secured to the animals during winter, than by suffering the leaves gradually to wither, and not gathering them till nature has evaporated all the juices. For sheep it might also answer well, when converted into hay, though it seems likely that the wet nature of this grass, together with the damp situations where it grows, would prevent these creatures from thriving upon it, if restricted to such diet; and at all events, newly imported flocks should not be suddenly removed from dry food to what is of so very succulent a nature."

The Governor states in another despatch to the Colonial Office, that two Americans who wandered upon West Falkland for fourteen months, lived upon the roots (probably the young shoots from among the roots) daily, and formed their huts of the cushion-like base, rolling one to the small doorway or opening when night came on.

The species of Phænogamic plants that came under the notice of the Botanist during the winter-months spent at the Falklands, are thus enumerated in his letter; the names

being, of course, subject to future revision. The numbers correspond with those in the collection.

1. *Hierochloe* (*Melica Magellanica*, Des Rouss.) 2. *Agrostis*, 3. *Aira*. 4. *Gunnera Magellanica* (*G. Falklandica*, Hooker, Ic. Plant. t. 489, 490). The embryo has a superior radicle in a pendant seed. 5. *Portulaceous* plant, *Colobanthus*, Bartling and Endlicher, closely allied to *Spergula apetala* of Labillardière from Van Diemen's Land. 6. A magnificent *Carex*, the "false Tussack" of the Falklands, probably *C. trifida* of Cavanilles. 7. *Trisetum?* 8. *Gaimarda australis*, the natural order very doubtful. 9. *Triticum*. 10. *Arundo Alopecurus?* 11. *Agrostis*. 12. Ditto. 13. Ditto. 14. *Poa*. 15. *Festuca*. 16. Ditto. 17. Ditto. 18. *Agrostis*. 19. *Festuca*. 20. *Agrostis*. 21. *Empetrum rubrum*, "Diddie-Dee" of the colonists. 22. *Callixene marginata*. 23. *Arbutus* (perhaps rather a *Gaultheria) microphylla?* 24. *Nanodea muscosa*. 25. *Myrtus Nummularia*, used as tea. 26. *Crucifera*. 27. *Cardamine glacialis*, D.C. 28. *Arabis Macloviana*, of the Ic. Plant. t. 498 (*Brassica*, Gaudich.). 29. *Pernettia empetrifolia*. 30. *Atriplex*. 31. *Ranunculus*. 32. *Statice cæspitosa*, Poir. 33. A plant unknown to me, but found also in Kerguelen's Island. 34. A singular umbelliferous plant, having the fructification of *Hydrocotyle*, but with fistulose leaves.* 35. *Caltha sagittata*. 36. *Ranunculus hydrophilus*. 37. *R. biternatus*. 38. *Stellaria debilis*, Gaud. 39. Specimens of *Myriophyllum*, showing that *M. elatinoides* and *M. ternatum* are one and the same. 40. *Bulliarda moschata*, Gaud. 41. A *Scleranthaceous* plant (*Mniarum biflorum*). 42. *Chiliotrichum amelloides*, Cass. (Ic. Plant. t. 485). 43. *Homoianthus echinulatus* (Ic. Plant. t. 491.). 44. *Abrotanella emarginata*. 45. *Nassauvia Gaudichaudii*. 46. *N. serpens*.

* Probably a species of *Crantzia*, Nuttall, of North America, and identical with *C. attenuata* from Buenos Ayres (Hooker and Arn. in Contributions to a Flora of South America.—See Hooker, Bot. Misc. vol. 3, p. 346). I possess a third and very distinct species, from the Andes of Quito, sent by Dr. W. Jameson.

47. *Senecio vulgaris.* 48. *S. candicans.* 49. *Chabræa graveolens.* 50. *Aster Vahlii* (Ic. Plant. t. 486). 51. *Macrorhynchus? pumilus,* DC. 52. *Taraxacum.* 53. *Chevreulia lycopodioides.* 54. *Composita?* 55. *Baccharis 3-dentata.* 56. *Gnaphalium affine.* 57. *Senecio littoralis, var. lunatus.* 58. *Azorella lycopodioides,* Gaud. 59. *A. filamentosa?* (not of Lamarck, nor of Ic. Plant. t. 591). 60. *Bolax glebaria* (Ic. Plant. t. 492). 61. *Caldasia,* probably *Azorella daucoides* of D'Urville; but a true *Caldasia.* 62. *Celeri* (*Apium graveolens*). 63. An Hydrocotyloid plant, perhaps *Azorella Ranunculus,* D'Urv. 64. *Rubus geoides* (Ic. Plant. t. 495). 65. *Veronica serpyllifolia?* but the stem furnished with minute hooked pubescence. 66. *Caltha appendiculata.* 67. *Gentiana Magellanica.* 68. *Calceolaria Fothergillii.* 69. *Oxalis enneaphylla,* (Ic. Pl. t. 449); this is an esculent, its foliage, as that of *O. crenata* from Chili, makes excellent tarts and jellies. 72. *Littorella?* 73. *Rumex,* perhaps *Acetosella.* 74. A highly curious and I think new genus of *Cruciferæ,* with long funiculi to the seeds. 75. *Gunnera* (vid. No. 4). 76. *Viola maculata* (Ic. Pl. t. 499). 77. *Acæna adscendens.* 78. *Nerteria depressa?* but very different from the Bay of Islands' plant. 79. *Galium trifidum?* 80. *Primula,* not distinguishable from *P. farinosa.* 81. *Pratia repens.* 82. *Lysimachia,* probably *L. repens,* D'Urv. (Ic. Pl. t. 536); but this, again, is possibly too nearly allied to *Anagallis.* 83. *Acæna lucida,* var. pilosa. 84. *Sagina,* near *S. procumbens.* 85. *Arenaria media.* 86. *Cerastium viscosum.* 87. *C. lineare,* of Gaudichaud, if not of Persoon, but too close to *C. arvense.* 88. *Stellaria media.* 89. *Poa annua.* 90. *Carex.* 91. Ditto. 92. Ditto. 93. *Oreobolus obtusangulus.* 94. *Juncus grandiflorus;* the solitary-flowered species should form a separate group, (this is *Marsippospermum* of Desvaux, and Hook. Ic. Pl. t. 533). 95. *J. Magellanicus.* 96. *J. Scheuchzerioides.* 97. *Luzula Alopecurus.* 98. *Sisyrinchium filifolium.* 99. *Chloræa?* 100. *Eleocharis.* 101. Ditto. 102. *Astelia pumila.* 103. *Poa.* 104. *Tussack,* (*Dactylis cæspitosa,* Forst.) 105. *Gnaphalium consanguineum.*

"As the ships remained a few days at the Falkland Islands, after their return from Cape Horn, it is to be presumed that further additions were made to the collection, since the early summer was approaching; indeed, the botanist says, on one occasion: "I this morning took off my hat to the first flowering specimens of *Viola maculata* and *Calceolaria Fothergillii*."

We have now only briefly to notice the botanical results contained in the latest and very recent intelligence that has been received from the "Erebus and Terror," namely a voyage, made from the Falkland Islands to St. Martin's Cove, Hermite Island, which lies westward of Cape Horn, which noted promontory they consequently had to double, now for the second time, in order to attain it. By the naturalist, indeed, this visit could not fail to be hailed with peculiar pleasure; for, although situated in a higher, or more southern latitude than the Falkland Islands (nearly 56° of south latitude), or, indeed, than any spot, yet explored by the expedition, possessing aught of vegetable life; yet it was well ascertained to be a forest land, and that this forest was composed of two species of little known, yet highly beautiful *Beech-trees*, the one having deciduous and the other evergreen foliage. A third and still more interesting evergreen tree (for a tree it may be called, seeing that it attains a height of 40 to 50 feet), is the once celebrated *Winter's Bark*, (*Drimys Winteri* of Forster). By its first discoverers, its virtues were highly vaunted; but soon the bark of *Canella alba*, being much more easily procured, was substituted for it, and our antarctic *Drimys* is now unknown in the practice of physic.

To accomplish this voyage, the ships, with a portion of the officers, left Berkeley Sound on the 6th of September, the spring of these southern latitudes, and arrived at their place of destination on the 21st of the same month. Hermite Island may be considered the most southerly spot on the globe where any thing like arborescent vegetation is to be found; and this circumstance is perhaps attributable to the proximity of the

island, through the medium of Tierra del Fuego, to the southern extremity of the continent of America, which abounds in forests, the seeds from which may have been carried by birds, or wafted by winds and waters. The particulars of the peculiar productions of this country have not yet been transmitted; for the latest accounts were written soon after the return of the "Erebus and Terror" to the Falklands, on the 13th of November, and the time destined to examining and determining the specimens was during the ensuing third voyage to the ice; but the following hasty list of the phænogamous plants, gathered during their brief stay, has been communicated.

"1. *Misodendron punctulatum*, Banks; but the character of the fructification is at variance with that of Pöppig in Endlicher's Genera. 2. A most curious little *saxifrageous-looking plant* and with the habit of *S. bryoides*; the leaves are singularly bicuspidate, the fruit is superior, 2-celled and has two styles; yet it does not look like the capsule of a Saxifrage. 3. *Statice*, on the hills, where the snow has just left the ground. 4. *Scleranthea?* probably a *Mniarum*. 5. *Pernettia*, which ascends to the tops of the hills, 1750 feet. 7. Something quite new to me, not found in flower, but it has since shown blossoms in the Ward's case,—not yet examined. 8. *Azorella*. 9. *Composita?* 10. *Abrotanella*. 11. *Azorella lycopodioides*. 12. *Festuca*. 13. *Empetrum rubrum*. 14. *Carex*, very small. 15. *Caltha*, or an allied genus, near *C. appendiculata*; the leaves 2-lobed, lobes incurved and conduplicate, and fringed at the margin, reminding me of the leaves of *Dionæa*;* there

* In my Herbarium are specimens of this plant from Forster's Collection, given me under the name of "*Oxalis Magellanica*," Forst. Imperfect as is the description of *O. Magellanica*, it is quite impossible it can apply to this plant, which belongs to the same group of *Caltha* as *C. appendiculata* and *sagittata*, so far as the appendages to the leaves are concerned; but these leaves are, otherwise, highly curious. The plant appears to grow in dense tufts, 2-3 inches high, thickly clothed with leaves and sheathed by the exceedingly large membranaceous stipules, two or three

are, besides, the same little ear-like appendages at the base. 16. *Misodendron*, in flower, different from No. 1, having three stamens instead of two. 17. *Caltha appendiculata*. 18. Our poor friend Menzies'* '*Viola 3-dentata*.' 19. Several forms of *Arbutus* (Pernettia) *mucronata*, for it is a very variable plant. 20. *Azorella*. 21. *Oreobolus obtusangulus*. 22. *Veronica decussata*. 23. *Gunnera*, the same as the Falkland Island species (*G. Falklandica*, Ic. Plant. t. 489, 490). 24. *Myrtus Nummularia*. 25. *Juncus*. 26. *Sisyrinchium?* very

times the size of the leaf itself; they are petiolated, and at first sight might be taken for the closed leaves of *Dionæa!* being orbicular, fleshy, deeply cut into two parallel lobes, which are fringed at the margins, and folded the one upon the other, exactly as in the well-known *Fly-Trap* of America. On these lobes being forced back, however, they are found to enclose the two curious appendages of the base (like those of *Caltha appendiculata*. See Delessert's Icones, v. 1, t. 43. and *C. sagittata*. See Cavanilles' Icones, t. 414), notwithstanding that these lobes are themselves almost as large as the leaves; so that, when opened, the leaves are in reality 4-lobed, the lesser ones closely applied or folded upon the face of the larger ones, and these two folded again laterally upon themselves. The smaller lobes, or appendages, as well as the larger ones, are equally beautifully ciliated, and the inner faces of all are, besides, concave and minutely papillose. I shall propose for this plant the name of

Caltha (Psychrophila, DC.) *dioneæfolia*; minuta, densissime cæspitosa, ramosa, foliis petiolatis orbiculatis carnosis bilobis lobis conduplicatis appendiculisque appressis pulcherrime setoso-ciliatis intusque minutissime papillosis, stipulis membranaceis maximis, pedunculo unifloro vix foliis longiore, sepalis 5 ovato-oblongis, staminibus 5-9, ovariis sub-3.

Hab. Tierra del Fuego, *Forster*. Hermite Island, at the southern extremity of Tierra del Fuego, *J. D. Hooker*.

* It was only on returning to the Falklands from Cape Horn, and just previously to writing the above, that Dr. Hooker had received intelligence of the death of his venerable friend Mr. Menzies, for whom he, in common with all those who knew his worth, entertained a great affection. Many notices of the stations of rare plants in distant regions did Mr. Menzies give to our young botanist before his embarkation, and the news of the decease of such a friend could not fail to touch him deeply, while traversing seas which had been visited by that amiable man fifty years before, when on his voyage round the globe with Capt. Vancouver.

small and curious, with singularly compressed fruit.* 27. *Colobanthus?* 28. *Plantago.* 29. *Deciduous Beech* (*Fagus Antarctica* of the London Journal of Botany, v. 1, t. 6), fl. ♂. 30. *Acæna.* 31. Variety of *Caltha sagittata.* 32. *Cerastium.* 33. *Primula,* probably identical with that which is found in the Falkland Islands. 34. *Juncus grandiflorus.* 35. *Graminea.* 36. *Drimys Winteri;* the wood of this tree has a glandular tissue, as in the Pines, and the genus *Tasmannia.* 37. *Berberis ilicifolia*). 38. *Berberis* (with foliage quite entire, as in *B. microphylla,* Forst., but verrucose flowers, like those of *B. ruscifolia.* 39. *Escallonia serrata* (Ic. Plant. t. 540). 40. *Haloragea.* 41. *Bulliarda.* 42. *Ericacea,* but undetermined; habit like *Pernettia,* but fruit a dry capsule, and the calyx wholly inferior and not in the least fleshy. 44. *Donatia Magellanica.* 45. *Pernettia.* 46. *Composita.* 47. *Nanodea muscosa.* 48. and 49. *Compositæ.* 50. *Thalictrum?* 51. *Fagus Forsteri* (London Journal of Botany, v. 2, t. 8) ♀. Probably among the specimens there may exist the *F. betuloides* of Mirbel (Mém. du Mus. d'Hist. Nat. v. 14, p. 469, t. 25, Pl. 6 in text, and *F. dubia,* Mirb. in the same work, and vol. Pl. 471, t. 26, in text, Pl. 7; which that author himself believes to be only a variety of *F. betuloides,* and there is good reason to believe this is identical with the *F. Forsteri,* or *Betula Antarctica,* Forst.). 52. —?. 53. *Ranunculus biternatus.* 54. *Pinguicula!* one specimen only with fruit, and a withered corolla upon it. 55. *Leptinella?* 56. *Galium.* 57. *Oxalis.* 58. *Drosera.* 59. *Cardamine.* 60. *Apium.* 61. *Chiliotrichum.* 62. *Azorella filamentosa.* 63. *Pratia?* 64. *Acæna?* 65. *Gunnera.* 66. *Cineraria leucantha?* 67. *Cineraria?* 68. *Tussack* (*Dactylis cæspitosa*) in full flower. 69. *Graminea.* 70. *Uncinia.* 71. to 76. Different Grasses, with only the withered remains of last season's flowers. 77. *Torresia.* 78. *Triticum.* 79. *Gaimarda Australis.* 80. *Astelia pumila.* 81. *Tetroncium Magellanicum* (Ic. Plant. t. 534). 82. *Oreobolus.* 83. *Callixene.* 84. *Juncus.*

* This was found by Mr. Wright in the Falkland Islands.

"The *Cryptogamiæ* are far more numerous, and I have paid particular attention to these, because others Naturalists can collect phænogamous plants, while few will be disposed to devote that minute attention necessary for the investigation of this Class. It has been an object with me to gather as many species as possible of each Natural Order, being extremely anxious to ascertain the proportion which the Natural Orders bear to each other in their respective Antarctic longitudes, and to each other in their own localities: as a matter of primary importance in the elucidation of Botanical Geography, and as evincing the effects of climate upon the Vegetable Kingdom, several of the tabular results I have already hastily drawn out show a delightful accordance; nor do I know of any result of this expedition which has given me so much pleasure as to find how beautifully certain groups rise in the scale as we proceed south, proving the accuracy of the learned Mr. Brown's views. As we advance in the Antarctic Regions, *Fungi* disappear and *Lichens* increase. Among the *Mosses* the *Pleurocarpi* diminish in proportion to the *Acrocarpi;* as does the relative number of *Pleurocarpi* which bear fruit, to those which are barren; *Cyperaceæ* decrease, and *Dicotyledones* bear a smaller proportion to the *Monocotyledones.*"

Our latest tidings of the Antarctic Expedition were dated the Falkland Islands, Nov. 30th; about a fortnight after its return from Hermite Island, and on the point of proceeding, as was expected, again to the south, in Weddell's track; there, we trust, to visit some of the New South Shetland group, where a Grass (*Aira Antarctica*) published by us in the "Icones Plantarum," was found, and which is perhaps the most southern phænogamic plant yet known to us. Previous, however, to the departure of the "Erebus" and "Terror," two very large Wardian cases were despatched to the Royal Botanic Gardens of Kew, filled with plants, the one the productions of Hermite Island, Cape Horn; the other containing the plants of the Falkland Islands, which latter was filled by the kindness of Mr. Lyall of the "Terror."

The boxes encountered a most stormy passage, but it is with infinite pleasure I can state that several of the most interesting among the plants have arrived in good condition, and bid fair to prove great acquisitions to our Gardens, and I trust I may say to our Forest Scenery; for among those that have reached their destination in the best state, are healthy young trees of the beautiful Evergreen Beech (*Fagus Forsteri*), the Deciduous Beech (*Fagus Antarctica*), and the Winter's Bark (*Drimys Winteri*). So far as I know, the two first of these have never been introduced alive to this country, before; while the latter is so rare that, I believe, previous to the present importation, the only plant of *Winter's Bark* that existed in Europe, is the fine specimen, 12-14 feet high, in the Royal Botanic Gardens of Kew. Now, all these and several herbaceous plants in the Collections, such as the *Gunnera Falklandica*, *Caltha appendiculata*, *Berberis ilicifolia* with its fine holly-like leaves, as the name imparts, and with flowers larger than those of any known species of the Genus, *Pernettia*, *Lomaria Magellanica*, *Asplenium Magellanicum*, &c. promise to do well. Many other plants had been placed in the Cases, but did not survive the voyage: as young plants of the *Tussack*, a great number of the fine *Mosses* and *Jungermanniæ* of Tierra del Fuego, especially the noble *Polytrichum dendroideum;* these all perished. Already the duplicate living specimens are dispersed, far and wide, among the many friends of the Royal Botanic Gardens, and every exertion will be used by the recipients, and by ourselves; to increase the stock of these interesting strangers. It is to be lamented that the season of the year (winter) did not allow of perfect seeds of the *Tussack* being sent; but the Governor, in his letter to Lord Stanley, has promised to collect and forward ripe seeds, and has suggested that the Grass is worthy of trial, not only on the coast, but even in an inland situation, such as Chat-Moss; and the success, which has attended the germination of the seeds in Governor Moody's garden in the Falkland Islands, is certainly encouraging.

Although, as already noticed, our letters from the officers of the expedition bear date only to Nov. 30th 1842, we have re-

ceived information by a more recent arrival from the Falklands, that the Erebus and Terror did not proceed to the south till after the first week in December, when, summer having commenced, we may confidently hope that the Botanists reaped a good harvest of flowering plants. It is believed that it was Capt. Ross's intention to proceed in the direction of Capt. Weddell's route, in order to verify his statements: in which case there exist many interesting groups of Islands in the way, which we trust will be visited. What success may have attended the navigator's approach to the Pole in that direction it is vain for us to conjecture. Of one thing we feel sure that the gallant commander will perform all that a British navigator can do, and that the same spirit animates every officer and seaman attached to the Expedition. Should no further discoveries be made than have already been effected by this Voyage, yet these, we have reason to know, when the results shall be published, cannot fail to add to the glory of this nation, high as it already stands, in all that concerns maritime discovery and scientific research.

Royal Botanic Gardens, Kew.
May 25, 1843.

While correcting for the press the last sheet of the above notes, the joyful news has reached England of the safe arrival of the Antarctic Discovery Ships at the Cape of Good Hope, on the 4th of April, after a third cruize in the dreary South Polar Regions, where they were brought up on the 5th of March, 1843, by the heavy Pack ice, in lat. 71° 30′, long. 15° W. This point was a few miles to the south of any previous navigator but Weddell (themselves excepted), and, several degrees* nearer the South Pole than had been

* The only account within my reach of the last Voyage of D'Urville (*the Expedition of the Astrolabe and Zélée*) is given in a volume published at Paris, 1843, entitled "*La Polynésie et les Isles Marquises.*" There it is stated that "the two ships," just mentioned, were at Port Famine, Patagonia, and as the month of December had arrived, it was high time to proceed towards the Pole. Weddell was the individual whose steps they

attained by the brave but unfortunate D'Urville, during his attempt to follow in the same (that is Weddell's) track.

wished to follow. Cook, in 1775, had met with ice in the 60th degree; Powell, in 1721, had been unable to proceed beyond 62; Biscoe had attained 63 with difficulty, while Weddell declared that he found open water as high as the 71st degree. The ships accordingly sailed in that direction and through smooth seas; but, on the 18th of January, an iceberg eighty feet high, was suddenly seen ahead of the *Astrolabe*. These floating masses became more and more numerous, and on the 22nd, in lat. '*about*' 65 degrees, an immense barrier was descried stretching all along the line of horizon. It would be difficult to conceive the magnificence of this threatening spectacle; in which the eye continually seems to descry some striking work of architecture; as gothic cathedrals of the richest sculpture, or groups of glittering obelisks and temples gigantic as those of Ellora, or perhaps vast quarries of sparkling marble, or an immense city, bristling with edifices, all as if viewed through the vapory and confused mist of dawning morn.

"Had not this scene been replete with perils, the eye might have dwelt upon it with delight; but the danger was too pressing, with the foe in full view. For several days, the ships coasted this eternal wall, in hopes of detecting some aperture, and every where it presented the same firm and formidable appearance. Many times the ships were entangled amid enormous glaciers, till on the 3rd of February, a barrier, 200 toises broad, cut off their return to the open sea. What was the terror of our crews, and how earnestly did they labour to extricate themselves with levers, saws, and hatchets! By dint of ropes and manual exertions, the ships were, in five days, hauled into a narrow lane between the icebergs, and the wind becoming favourable, they hoisted all sail and made a final and successful effort; and alternately pushing and being pulled, though at the risk of flying into a thousand shivers, they gained the open water. Thus safe, though much damaged, the vessels escaped from a week of appalling confinement.

"This convincing proof seemed to forbid any exposure to new perils *on the faith of Weddell*. But loth to quit these latitudes with only disappointment, M. D'Urville pursued the line of the barrier for three hundred miles, and only quitted it when accumulated ice blocked up his passage. He then returned upon the Orkneys and the eastern shore of New South Shetland, completing their geography; and being anxious to ascertain the true nature of those snowy peaks to which whalers had assigned the names of Palmer's Land and Trinity, and which had also been variously called by Forster, Biscoe, and Morrell, he made for these

A brief sketch of this last cruize will be the more interesting, because, on this occasion, probably owing to the frequent occurrence of islands, and the comparative proximity of the South American continent and the Falklands, vegetation, such as it is, and requiring almost the eye of a botanist to descry its existence, was detected in latitudes far more southerly than during either of the two previous voyages.

The Expedition quitted Berkeley Sound, East Falkland, on the morning of the 17th of December, 1842, and making all sail, ran to the southward, with fresh breezes, gales, and much misty, foggy weather, till the 24th, when the position of the ships was a little eastward of Clarence Island, though the thick atmosphere prevented the land being made. On that day the navigators fell in with the first berg and much rotten ice, and saw some birds, the white *Chionis* of the Falklands, which are always a sure sign that land is near. On Christmas day, the same cheerless weather prevailed, though it must be remembered that the 25th of December is the midsummer of the Southern Hemisphere: snow-squalls and furious winds from the S.W. assailed them; but the evening becoming clearer, many icebergs were discerned, and the first *White Petrel* gave intimation that the Pack-ice was at hand,

little known points. Approaching the land in a different direction from any previous navigator, our French commandant explored it for a hundred and twenty miles, between 63 and 64 degrees south and 58-62 degrees west of Paris; and found its coast everywhere crowned with numerous peaks, and covered with unmelting ice. To the largest portion of land was assigned the name of Louis Philippe; the smaller ones received various appellations. During the progress of this fatiguing service, the season became late, and scurvy having seized the crews, it was necessary quickly to quit these dreary regions, and regain one of the ports of Chili. When the ships reached Conception, forty men on board the *Zélée* were unfit for service; and though only fifteen were sick in the *Astrolabe*, yet the disease was making progress, and the Commandant himself began to show symptoms of it. Careful medical treatment, a salubrious regimen, and the air of land, quickly banished this scourge, and brought health back to the countenances of the navigators, so that when they cast anchor in the Bay of Valparaiso, the number of scorbutic individuals was reduced to three."

for these beautiful birds are never seen away from the immediate edge of the Pack; and the ships accordingly fell in with it the same night. First passing through some heavy streams of ice, they made the Pack, running east and west, very heavy and formed of large pieces of rotten ice. Many bergs were floating about, apparently quite out of their element (if such an expression is allowable), for they were much broken up, and partially melted, looking very different, indeed, from the huge, hard, tubular masses which the navigators had been accustomed, during their two previous cruizes, to meet with. The fogs continued so dense, that, though the surf was heard dashing over the ice, and thus apprizing the voyagers of the proximity of danger, it was impossible to see anything. On the 28th, the icy hills of Palmer's and Louis Philippe's Islands were announced by the increasing coldness and clearness of the air, and several large barrier bergs, and much loose ice, floated in all directions. Many birds, large Finner Whales, and shoals of a smaller species, speckled black and white, were observed; and what deeply interested the botanist, as occurring in such a high southern latitude, the ships passed two much battered patches of *Sea-weed*, apparently belonging to the genus *Macrocystis*, but which it was impracticable to pick up. The land came in sight that evening. It is described as consisting of low hills, nearly covered with snow, with several islands lying off it, and terminating to the northward in a bluff, which is both further to the southward and eastward than the Pointe Française of D'Urville. The aspect is by no means fine or imposing, the land being low and of a rounded outline, apparently but a few hundred feet high, partially bare of snow, and presenting huge glaciers here and there. Icebergs were very numerous, often blocking up the view of the horizon, and the sea was full of loose ice, much of which was stained brown, with those infusorial and confervoid remains, found abundantly by former navigators.

Many seals and penguins frequented the ice in this place, and the "Terror," passing several islets on the coast, was

enabled to pick up a piece of sea-weed, which the surgeon of that ship gave to the botanist on board the "Erebus," by whom it was ascertained to be a singular new *Sargassum*, analogous to, but distinct from, a species previously found on Lord Auckland's Island; and he thus describes it:— "Frond pinnatifid, its segments 1½ inch long entire round, vesicles axillary solitary, and the diameter of a small grape, receptacles crowded together, shortly pedicellate axillary. Colour chocolate brown. Length 3 feet, sparingly branched. Dissections of the receptacles are made from the recent plant, and will be sent home." This sea-weed is probably allied to the *Fucus decurrens*, of Turner's *Historia Fucorum*, and is mentioned by Webster in the Appendix to Forster's Voyage,* under the head of Deception Island, one of the South Shetland group.

Two days were spent in endeavouring to get down to the south-eastward, but snow-storms and heavy Pack-ice rendered this hope fruitless, so that on the 30th, the "Erebus" bent her best bower cable, and bore up for the land again, which was approached somewhat to the south of where they had neared it, four days previously. The mountains were here of greater elevation, with several peaks, which were calculated at about 3,000 feet high, and all apparently of volcanic origin, though not active at the present day. Enormous glaciers might be seen, running along some parts of the coast for many miles, terminating towards the sea in icy precipices. On the little islands near the land, the snow was often melted; and though low, many of them presented remarkable craters, with numerous and very large icebergs floating round them. Several gulls, terns, cormorants and other sea-fowl were noticed here.

The last day of 1842 was fine and clear, enabling the voy-

* "The *Fuci*, or *Sea-weeds*, were few and unimportant; the most common was found floating. It was of a pale chocolate colour, stem and branches flat, &c. The mode of reproduction appeared to be from a cluster of buds, appended to the terminal branches."—Forster's Voyage, vol. ii, Appendix, p. 301.

agers to steer to the southward, through openings in the ice, with a strong tide or current, and in the evening they descried a most singular crater-shaped, conical island, to the south-west, backed by what appeared to be other low islands, all quite bare of snow, and these again, surmounted by many mountains of considerable elevation and tabular form, covered with snow and ice. What seemed separate islands, however, proved a continued land; and as it was thus impossible to be penetrated, the ships lay-to, among very thick ice; and to their disappointment, were wafted northward, along with the surrounding bergs, by a tide (?) which required all their efforts to resist, and to maintain their position.

New Year's Day was also fair; the ships were then in lat. 64° 14′, long. 55° 54′, and lying off the above-described land, which forms a deep bight, in which is situated the small conical island. The coast trends from South to E.N.E., and ends in a bluff point, covered with little extinct craters, and bare of snow. Many stupendous icebergs, of a tabular form, and from 2 to 5 miles long, formed a kind of chain from the point of land, all aground, and doubtless retaining the Pack in its place, like so many firmly-fixed piles. On the 2nd of January, the Pack closed upon the ships, which were accordingly made fast to a large piece of ice, with the view of preventing pressure and keeping them from drifting too far. The Floes were large, and much more like hummocks in their character than is general, appearing as if they had been broken up and consolidated again, full of holes, and covered with soft treacherous snow. Many birds were hovering about the ice, and among them, a few King Penguins, weighing 60-70 pounds, with *Hawk-Gulls*, *White Petrel*, and four or five other species of *Petrel*. A heavy northerly gale came on the next day, accompanied with mist and snow, and the ships cast off from the floe and got into a little pool of water, in which they beat about among ice, their object being to gain the bight, and the small crater-shaped island, which they were enabled to do on the 6th, when the weather again became clear, and the sun, to their great delight, shone forth. The

botanist landed on the little island, and found it a most singular spot. He gathered upon it what he calls the ghosts of 18 cryptogamic plants, but there appeared no trace of phænogamic vegetation; and except one or two of the *Lichens*, all the species were extremely scarce. Of *Mosses* he found four kinds, one coming into fruit; and eight *Lichens;* among them, a *Parmelia*, the rest being crustaceous, except a *tremelloid* one; a green species of *Protococcus*, and *Ulva crispa*, apparently identical with the European species found in Ross's Islet, as stated in the list of Captain Parry's plants: thus, unless the *Red-snow*, spoken of by Forster, should prove the real so named, plant of the Arctic regions, this *Ulva crispa*, with *Desmarestia aculeata* also gathered, are the only vegetable productions common to both extremities of our globe, and it would be interesting to ascertain what are the intermediate countries which they inhabit. *Asperococcus bullatus?*, or a very nearly allied species, identical with what is found at Cape Horn, with the remains of an *Iridæa*, (also a Falkland Island species, *I. micans?*) and an *Oscillatoria*, or *Calothrix*, complete the list. The Botanist says, that though his specimens, the best which circumstances enabled him to procure, are but such poor scraps, that it was almost difficult to identify them, yet he felt it a great consolation, after so long a cruize, to gather any plants in regions far more southerly than vegetation had been supposed to inhabit. "I have prepared," he writes, "drawings of all the plants, one is a very beautiful and scarce little *Lichen*, a *Parmalia* of a golden yellow colour, with black scutella, which I should like to name after my kind godfather.* The *White Petrel* breeds in the cliffs, and there was a large colony of *Cormorants* and *Penguins* near the sea. I collected

* Little aware that the decease of this estimable man, and elegant scholar, the Rev. Jas. Dalton, late Rector of Croft, in Yorkshire, like that of the venerable Menzie, had recently taken place. Mr. Dalton paid particular attention to the *Lichens*, as well as to the *Mosses*, though he was well acquainted with phænogamic botany, and with the *Carices* in particular.

specimens of these birds and their eggs; also of the rocks, and of every thing I could find, without taking my eyes off the plants. I ascended the hill as high as was possible, but could not reach the summit, for we were only allowed three hours upon the island, and I dared not waste time in making such attempts. As it was, we were not half sufficiently long there to accomplish what I could have wished, for the difficulty I experienced in detecting any vegetation at all, convinces me that much may have eluded my researches, and that perhaps double as many plants might have been gathered, if I could have staid to seek for them. The *Sargassum* above-noticed, does not appear to grow on the shores."

The afternoon of the day during which this island was visited found the officers and crew with the less agreeable employment of towing the ships off the land, by the help of all their boats, for the winds were so light and the tide ran so strong, that it was difficult for the vessels *to hold their own.* At night a fresh breeze springing up, enabled the navigators to steer for the point of land before mentioned, and to pass with difficulty through the very narrow channel, which separates this promontory from the chain of icebergs. This land proved on near inspection, to be an exceedingly slender cape, bare of snow, with steep banks dipping down to the sea, and full of extraordinary cracks and fissures, with its top covered with little cones and craters, apparently formed of a mass of light brown volcanic mud, which had cracked while in the process of induration and through which the vents had protruded. Or possibly, this land might be composed of a mass of scoriæ, ejected from the little craters, which has been worn into perpendicular escarpments towards the sea, by the action of the tides, and the fissures are caused by the snow melting. The voyagers were much struck by the singular aspect which these isolated pieces of land, quite bare of snow, as of vegetation, yet so very near an ice-bound continent, present. The weather continued so thick for three days, that the two ships were only enabled to keep company by firing guns and beating gongs, &c. On the 9th, as the gloomy atmosphere and the ice, closing round,

rendered voluntary progress impossible, and the tide drifted the " Erebus" towards a large stranded berg, the boats were lowered and she was towed off, and after running between two icebergs, she was made fast to a large floe, her position having, even then, to be constantly shifted as the ice turned round. This state of things continued till the 11th, when they cast off from the floe and made for a space of clear water between the Pack and the land, which they reached and then observed a barrier of ice or glacier, presenting a wall which much resembled, though it was on a smaller scale, the barrier twice encountered by the Antarctic expedition in lat. 78°. It is described as meeting the steep shore quite abruptly and running back in a slanting line to the loftier land and mountains, forming a sloping wall, perhaps 70 feet high. The bergs which are seen in its vicinity, cannot have formed a portion of it and been broken off, as they are considerably loftier than itself and aground much further from the shores. Far as the eye could reach, this glacier skirted the coast to the south east, the tide running very strong at its base and coloured of a burnt sienna hue by the infusorial and confervoid substance. On the 13th, at 2 P.M., the tide hurried both ships among the lee-ice, (or ice lying to leeward), a most troublesome and unfortunate circumstance, for the ice is, of course, much heaviest and most closely packed to leeward, and when once a ship gets entangled with it, she cannot sail out. The only mode of extrication by which a vessel can regain the open water to windward, whence she came, is to warp out, by fastening lines to the hammocks on the ice, and bringing them to the capstan, gradually, against both wind and ice, heaving her ahead between the pieces. Several warps require to be out, from different parts at a time, and are hauled on, or brought to the windlass, capstan or winch, according to circumstances. All hands, on board must strain at this work, which cannot be pursued if there is much wind. As it was, five minutes sufficed to carry the " Erebus" into the lee ice on the 13th of February, and three hours were required to get her out again. The " Terror," being a quarter of a mile farther in, was not

clear till next morning, all her men, of course, on deck, and fourteen hours of severe labour were spent in extricating her from this dangerous situation. The same scene of labour and peril was repeated the next two days with increased detention.

But so continued and so fatiguing were the baffling difficulties with which, day after day, and often during many nights, the persevering commander of the expedition and his officers were tried, that we cannot continue to particularize them, and shall sum up their month of January of this year (equivalent to our July) by saying that the time was spent, generally near the Pack edge, in fruitless endeavours to proceed towards the south; sometimes beating about in little pools of water, and sometimes made fast to floes, with the agreeable diversity of weather afforded by gales of wind, snow-squalls, fogs and misty rain. If they endeavoured to penetrate the pack, which barred their southerly progress, they were beset with the ice and lost much time in getting out, and if they bore away, then the current and the course of the floating bergs took them to the north, the direction which of all others they sought to avoid. On the 4th of February a heavy swell from the north-east indicated the proximity of clear water and by dint of tacking and boring, they cleared the loose ice, and hoped, by going rapidly to the east, to reach Weddell's track, which Captain Ross trusted to find either quite open, or but little intercepted by ice. The prevalence of westerly winds in these latitudes favoured this supposition. But, as if to disappoint their main object, the expedition was now doomed to encounter such a succession of easterly gales, right in their teeth, as they had never met with in all their previous experience of Antarctic navigation. The build of the "Erebus and Terror," which one of their officers term "our round-nosed ships," was peculiarly unfavourable to making way against head-winds, and when they had obtained a latitude, but a few miles to the south of where D'Urville had been foiled, they found the same heavy Pack-ice blocking up Weddell's homeward passage. Already the increasing darkness

of the night, forbidding any progress during those hours of obscurity, rendered it impracticable to enter the Pack-ice, even had it been slack enough for them to do so; and the Captain had, therefore, no choice but to follow the edge of the Pack, keeping, if possible, to the southward of the French track, and wherever an opening might present itself, he intended to attempt following it in the direction of the Pole.

Until the 22nd, the Pack was accordingly traced, but on the next day, the ships lost sight of it; and glad to be making any way to the south, they joyfully began running S.E. in clear water, with bergs only, and no Pack-ice in view. For, though the rapidly lengthening nights, and the absolute necessity of risking navigation in the dark, if any progress at all was to be made, were enough to daunt the courage of those who knew something of the dangers which beset these dreary seas, yet such was the reluctance of Captain Ross and his officers to give up before accomplishing all they wished, that, even at this late season of the year, they persevered in pushing onwards. On the 28th of February they re-crossed the Antarctic Circle, after having experienced another month of most unfavourable weather; for, except one day, it had snowed more or less throughout the month of February, and the sky was constantly obscured with clouds. The temperature, during this high summer of the South Polar climes, varied between 27° and 35°. When the wind blew from the north, coming over the warmer ocean, it invariably brought a thick and foggy atmosphere, the warmer vapours being condensed by the colder sea in this latitude. To this weather the Antarctic Regions are always subject. No great extreme of cold is experienced during summer, and still less any heat, either in the air or the sun's rays, intercepted, as these latter constantly are, by the fogs. The weather is never genial, and the moon and stars rarely, if ever, appear at night, when darkness comes on: probably no climate can be more uncongenial to vegetable life, or to what may be termed the *enjoyment* of human existence either. To add to these discomforts, once a week on an average,

gales of wind are sure to blow, and then, when the ships are in open water, the heavy seas are such as to forbid anything being done with comfort, as the vessel rolls, her bulwarks under water, and all hatches battened down.

Thus time wore on, in fruitless labours, till the 3rd of March, when that rare event, a calm, took place, enabling Capt. Ross to sound, or rather to try for bottom, with 4000 fathoms (24,000 feet) of line. It consisted of 250 fathom of 1-inch rope, and 3,750 fathom of $\frac{3}{4}$ inch, with a weight of pig iron of 1 cwt.

On the 5th the weather became very thick with snow-squalls, and many Petrels and much berg ice were seen. In the afternoon of that day, the ships again met the Pack-ice, and bore up in lat. 71^0 30′, among the ice, which was very heavy, stretching in every direction far as the eye could reach. The rapidly falling barometer also indicated a gale, which was the more to be anticipated as the wind had been tolerably moderate for three or four days; and since the proximity of such tremendous masses of ice was very dangerous in the event of a storm, the ships hoisted a press of sail and endeavoured to clear the Pack and icebergs, which the falling snow rendered it difficult for them to descry and avoid. On the 7th, the gale and the snow-squalls continued, and the most intense anxiety prevailed, because of the masses of ice which floated all around. The "Erebus," too, was clogged in her movements by her consort, the "Terror," a much worse sailer, which was very heavily pressed at all to keep up, as the former went diving and tearing through the water. Yet to have parted company might have caused the destruction of one or both vessels and their noble crews. No alternative remained but to quit these fearful regions, and, accordingly, on the 9th, the ships were finally put about. At this time, night commenced at 8 P.M., and dawn at 4 A.M., and when there was a moon, the state of the atmosphere prevented its showing any light.

On the 11th of March, the Antarctic Circle was recrossed; and the navigators began a rapid northerly passage,

amid many very large icebergs, which it required incessant caution to avoid. On the 16th, the moon was seen for the first time during many months.

The course was now directed towards the land, laid down in the charts as Bouvet's Island, or Cape Circumcision, discovered by a French captain, Bouvet, about the middle of the last century, and ineffectually sought for by Captain Cook himself, and by the ship which separated from him, and was commanded by Captain Furneaux. The masters of two of Enderby's ships, the "Swan and Otter," are said to have seen this land in 1808, and they describe it as high, completely covered with snow, and unapproachable for many miles, because of the Pack Ice.

On the 19th, in lat. S. 54° 31′, long. W. 2° 25′, a heavy southerly gale came on, accompanied with gloomy snow showers. Passing among Icebergs, they approached the position assigned to Bouvet's Island; but the thick weather, and tremendous surf running, prevented the possibility of descrying any thing. At midnight the "Erebus" passed immediately to windward of a large mass of ice, and struck against a smaller piece, supposed to be from a berg close by. It was afterwards discovered that the "Terror" had come suddenly on an iceberg at the same time as the "Erebus," but happily saw the danger soon enough to bear up, and then ran close to the surf, which was beating over all within a half a cable's length of the cliff. The light of the "Terror" had been observed to shoot a-head of the other ship, and though the reason of this manœuvre was not visible, yet it was rightly guessed to proceed from the vicinity of extreme peril. To have remained longer in such a situation, with the view of seeking for land of but doubtful existence, would have been madness; and Captain Ross, assured that he must have passed close to the position assigned for it, gave orders to bear away for the Cape of Good Hope. The tremendous gales before which the Discovery Ships now ran were only uncomfortable, for the construction is such, that in open

water, where there are no icebergs, no seas can possibly, humanly speaking, harm them.

On the 24th, in latitude, 50°, 30′, two patches of the *Laminaria* were observed floating, but the state of the sea rendered it impossible to pick them up. The eyes of the voyagers were greeted on the night of the 27th with the sight of the stars, which had not appeared since the ships had left New Zealand, in November 1841. Such is the climate of the cheerless regions of the southern hemisphere! The Botanist writes, on the 24th of March, "I am just called on deck, for the captain has been sounding for temperatures at various depths, and has brought up a stock of the *Laminaria*, which I believe to be the same as one of the two species from Cape Horn. Like the *Sargasso weed*, this *Laminaria* grows and increases at sea. The Stem (the root is gone) is cylindrical, and about 6 inches long; lamina not bigger than one's hand, divided into twelve laciniæ, 6-14, and even 20 feet in length, plane, varying in breadth from 2 inches to a foot, very coriaceous, composed of a cortex of dense and, when dry, horny tissue, and a single row of horizontal cells of very large size. Colour olive-yellow, olive-brown, or green, the older portions thick, wrinkled, and dark, the younger parts brighter yellow, and slender, more tender and flatter, none of the apices entire. The southern *Laminariæ*, which, being among the giants of the acquatic vegetable kingdom, ought to be well known, appear almost entirely misunderstood. This plant, for instance, which I believe to be the *Laminaria*, or *D'Urvillea*, *utilis*, referred to the *Laminariæ* both by Greville and Endlicher, certainly does not agree with the characters laid down by the former author, (vide p. 24 of his *British Algæ*). A sketch, which I made of it at Cape Horn, shows the sporules to be contained in distinct receptacles, embedded in the cortical substance, and appearing, on a transverse section, like a string of beads immediately under the surface; they open by pores and emit a mass of

mucus, with spores most distinctly furnished with a pellucid limbus. These receptacles are scattered by thousands in the surface or cortical layer, and when their contents are ripe, they stain the hands of a rich brownish-black. As the weed dries, the contraction of the tissue expels the spores and mucus; which, on hardening, form myriads of little black tubercles on the surface; and then alone is the fructification conspicuous. All this is precisely as in *Himanthalia;* except that the central substance of this plant consists of large transverse cells. Greville, quoting Bory in confirmation, calls a part of the stem of the latter *fronda*, and the thongs he considers as *receptacles:* but, as far as I can see, his receptacles are precisely analogous to the laciniæ of the *frond* of this *D'Urvillea*, (or *Laminaria*, whichever it may be). Further, I suspect the frond of the *Himanthalia* to be an abortive bladder, analogous to the trumpet of the *Ecklonia buccinalis;* for Greville says the fronds are, at first, cylindrical and pear-shaped; then they fall in, and become plano-concave. Not being familiar with the structure of the British, or true species of the genus *Laminaria*, I cannot tell whether the *D'Urvillea* in question should belong to *Fucoideæ*, or *Laminariæ:* but assuredly, so far as published characters avail, to the former.

"When we reach the Cape of Good Hope, it is my intention to seek carefully for seeds of *Ecklonia*; for I incline to believe that, together with *Himanthalia* and *D'Urvillea*, it will form a very pretty group of *Algæ*. If the thongs of *Himanthalia* are receptacles, so must the laminæ of *D'Urvillea* be; but I can see no reason why either should be considered as such. The sporules and their cells are quite analogous to those of a *Fucus* or *Sargassum*, where they are contained in what are undoubtedly receptacles. Thus the transition will be very simple, through *Ceystosria* and *Halidrys*, where the leaves are gradually transformed into pods. This weed was much infested with barnacles."

On the 30th of March, the ships were fast approaching the Cape of Good Hope, with a mild air and soft

wind. The whole time occupied in the last cruize, was spent in such tempestuous latitudes, and among such icy seas, that nothing new in the way of Natural History could be discovered; and accordingly, our young naturalist, who declaresthat mental occupation afforded him the sole relief from the anxieties and *ennui* incident on the voyage, had devoted himself to examining, and making finished drawings of many of the plants found at former times. The *Mosses*, which were collected in the far southern regions, particularly engrossed his attention; and taking the learned Mr. Brown's Appendix to Ross and Parry's First Voyages as a model, he made full descriptions of them all. He says, "The genus *Andræa* puzzled me exceedingly and occupied many days, during which I examined several hundred specimens. I do hope my drawings are scrupulously accurate, for I invariably compared them with descriptions made on the spot at the time of gathering the specimens, and I consider the mosses to have generally received three different examinations. Where there is so much novelty, I may have occasionally erected varieties into species; but in such a novel field, I trust some allowance will be made for any errors. All the *Gymnostoma* of the South are *funarioid* in habit and alliance, as Brown first remarked of the *Gymnostomum fasciculare*, *&c.* I have placed them, accordingly, at the end of *Brya*. The general arrangement I have adopted is that of Arnott, as modified by my father, (Sir W. Hooker), in Lindley's work on the *Natural Orders*. There are hardly any novel genera, my main object being rather to place the plants in their true position and relation, than to give them new names, and then leave other botanists to squeeze them in wherever a place can be found among their congeners. There exist many beautiful analogies among the groups of *Mosses*, but it is difficult to characterize the genera properly. *Gymnostomum* must be split; for there is hardly a genus of *Acrocarpi*, to which each of the species does not bear more affinity than to its congeners, in the present arrangement.

"The other drawings I have made will be found mere

attempts, especially the *Lichens*, which are the first I ever tried in this Tribe. The descriptions are full. There seems to me a sad deficiency of tangible generic characters in this family, except among the larger kinds. The green *globules* which form a *stratum* at the *base of the Asci*, in all those species which I have examined, are not noticed, so far as I can find, by any Botanist. I have also drawn the *Sargassum* of Deception Island and the *D'Urvillea*. The Flora of the Falklands has claimed some of my attention, but I have bestowed most pains on an introductory paper on the *Geographical Distribution of Antarctic plants*, distributing their relations to those of the Arctic regions, and the analogies which exist between the Antarctic Polynesian and American Floras.

"Circumstances have prevented my doing much during this cruize among the marine animals. I lost all my gauze among the Pack ice, from the water being full of little pieces of ice; and where there has been open sea, the gales blowing and a heavy swell running prevented the possibility of using the tow-net. I hope to pursue my drawing diligently on the passage between the Cape of Good Hope and England, and to study all the plants of the Cape and Rio which I can pick up while we stay at those Ports. But I have forgotten almost all that I ever knew of Tropical Botany, or even garden flowers, not having seen so much as a Rose since quitting New Zealand, almost two years ago.

"I often think of the Ward's Case which I sent home from the Falklands last November; and I hope the *Beeches*, especially, may have reached England alive. They were in such fine order when despatched! But, without seeing the *deciduous Beech* of Fuegia no one can form any idea of the exquisite beauty of its budding leaves. I trust these trees will thrive at Kew. Next to a good *Arboretum* at the Royal Gardens, I should like there to be a Fern-House. The noble *Tree-ferns*, huge *Acrosticha* and *Steganiæ*, with the *Hymenophylla* creeping on the ground, would be a splendid novelty. And *Ferns* are very easy of transportation. The more I saw of the *Filices*, the more I was convinced that

their geographical distribution chiefly depended on an uniform and moist temperature, such as is generally found in islands. All the Magelhaenic species that inhabit the Falklands, acquire there a harsh and coriaceous consistency, from the vicissitudes of temperature and of the hygrometric state of the air to which they are exposed. The Kerguelen island *Stegania* I believe to be the most Antarctic of ferns, though its position as to latitude is far lower than that of many others."

Happily and usefully, as above detailed, was the Botanist occupied in the interval between quitting the ice and arriving at the Cape of Good Hope; where, as already stated, the ships came safely to anchor on the 4th of April, 1843.

Thus, by the undaunted skill of the most accomplished of Navigators and through a merciful Providence, such a series of investigations has been carried on, for three successive summers in the South Polar Regions, as cannot fail to prove of inestimable value to science in its various departments, and to maintain, for the British Navy, that pre-eminent rank which it has so long held among the nations; "terrible in war," and during times of peace, engaged in extending the boundaries of useful knowledge, promoting navigation and commerce, and prosecuting geographical discoveries through the remotest regions of our globe.

During this long and hazardous voyage, of four years' duration, much of it pursued through unknown seas, and amid perils and privations of no ordinary character, disease has never entered the ships, nor have any casualties taken place beyond what must be expected in every protracted cruize, under the most favourable circumstances. One poor fellow washed overboard in the tremendous seas between Kerguelen's Island and Van Dieman's Island, and another, in the awful hurricane described as occurring on the night of the 12—13th March, already mentioned in this article, are, I believe the only deaths: and a single officer and sailor invalided and sent home from the Falklands, but both, now,

happily recovered, comprise all the sufferers by accident or illness.

A month's stay at the Cape of Good Hope, was anticipated, which, it was hoped, might yield some good herborizing, and an agreeable meeting with Dr. Wallich, Director of the H. E. I. Company's Botanic Garden at Calcutta, and now at the Cape for the benefit of his health; unless, indeed, that gentleman should still be on his tour in the interior. His society would afford some compensation for the absence of Mr. Wilmot.*

From the Cape, St. Helena was to be the next place visited, and then Rio; so that, we trust, ere autumn has closed, these enterprising and successful Antarctic Voyagers will be welcomed to their native shores.

* Frederick Eardly Wilmot, Esq. (son of the recently appointed Governor of Van Dieman's Island, Sir Eardly Wilmot, Bart.) one of the officers of the Antarctic Expedition, who had been left in charge of the corresponding Observatory at Cape Town, on the first arrival of the ships at that port, in 1840, but is now on a visit to England. Mr. Wilmot is about to return to the Cape, and, as we understand, to be engaged in an important survey of a distant part of that colony.